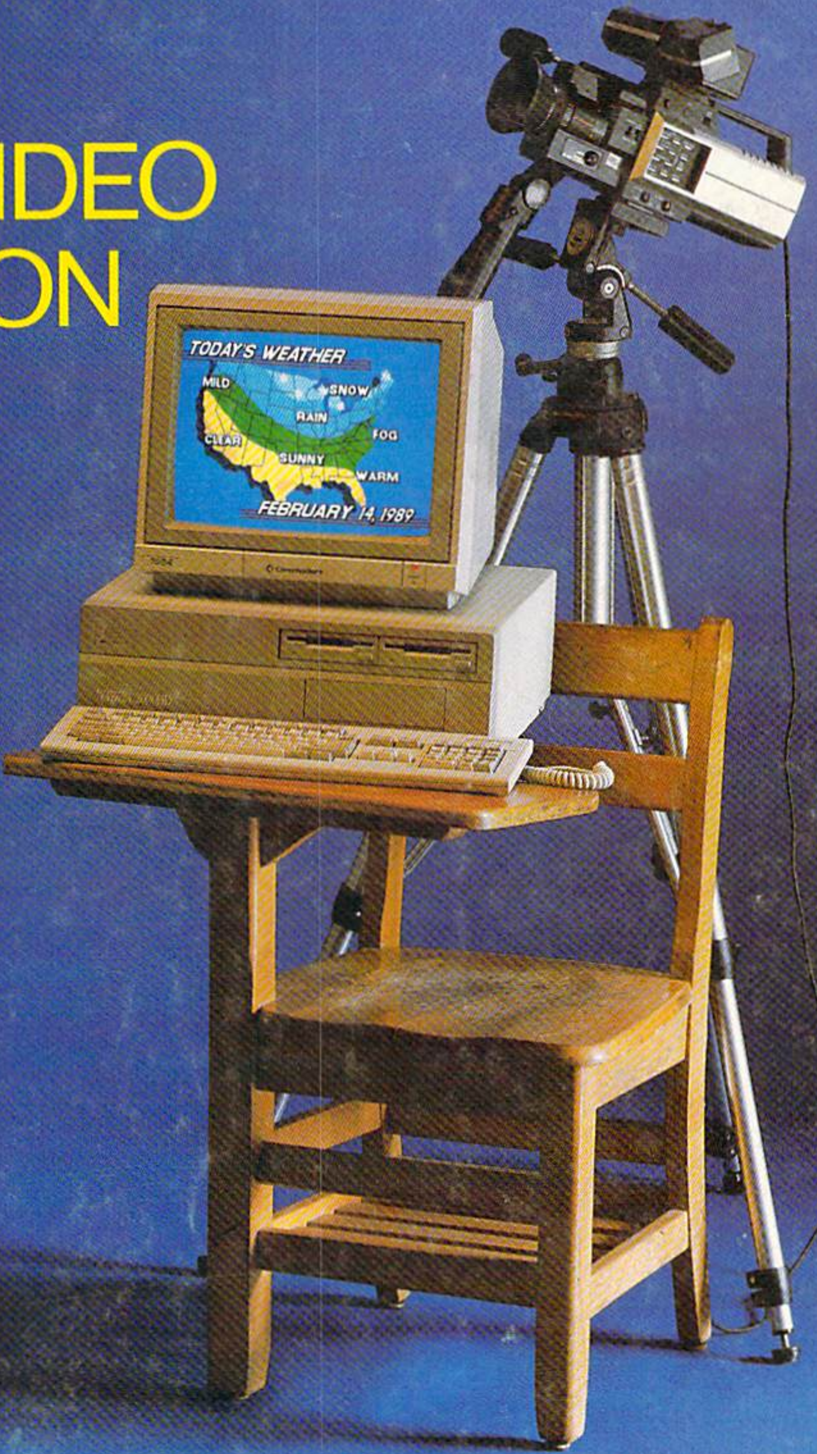
Software Nostalgia

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October 1989
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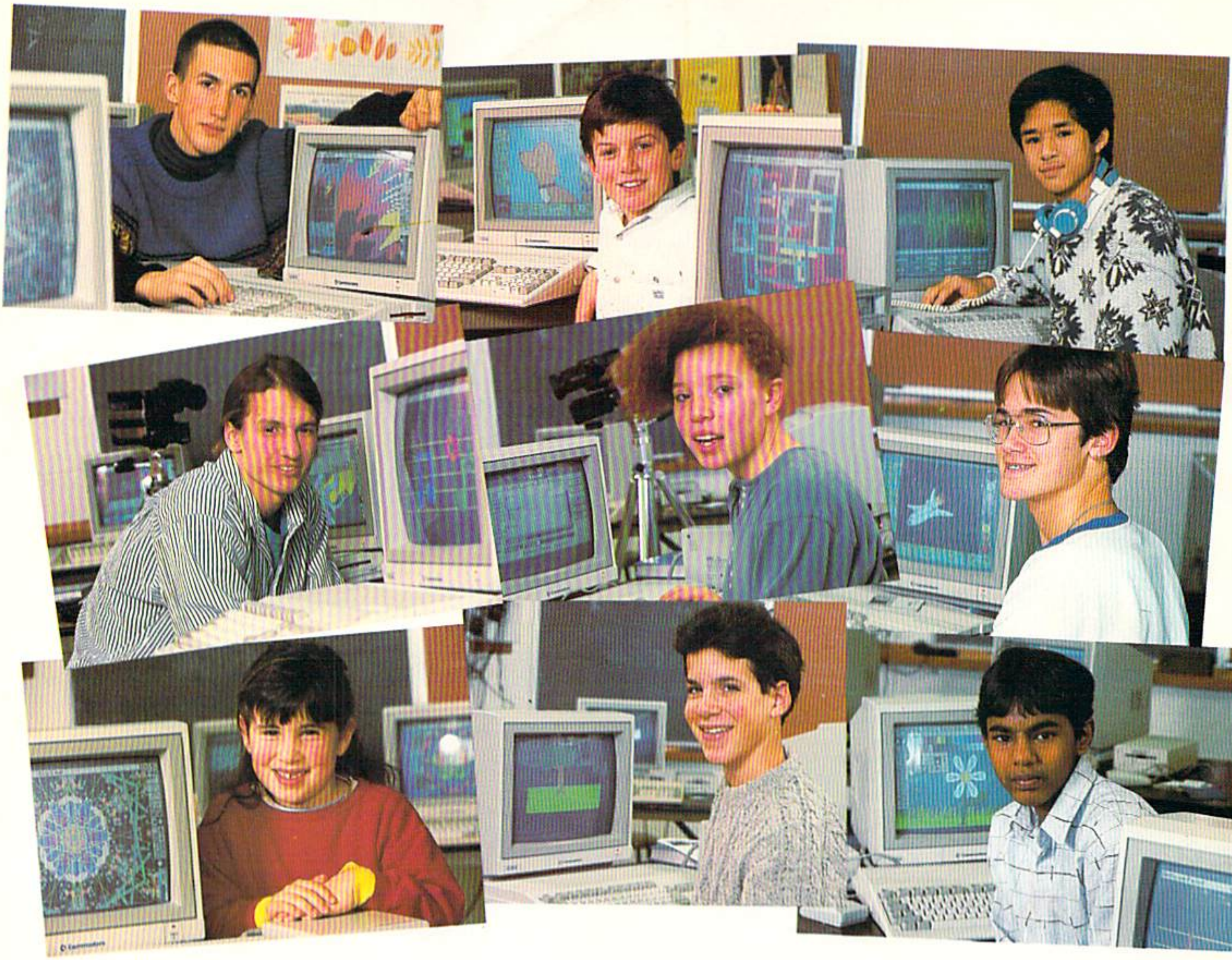
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If you are a prize winner, claim your prize by filling in the information below and sending via certified or registered mail by January 10, 1990, to Data East MVP Sports Sweepstakes Winner, P.O. Box 8456, Beaverton, OR 97076.

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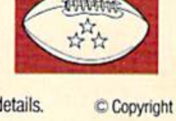
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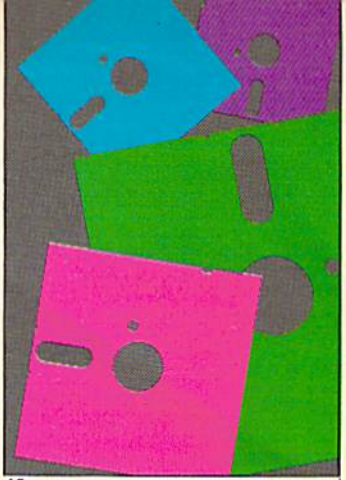
DATA EAST MVP SPORTS

Commodore
M A G A Z I N E

OCTOBER 1989, *Volume 10, Number 10*



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FEATURES

REVIEWS

DEPARTMENTS

COVER STORY

COVER PHOTO: *Gene Smith*
Software: *Pro Video Gold*

Pirate Prattle

Dear Editors:

My name is Willie and I would like to tell Gary Fields how to make life really fun, it's by pirating. I am an ordinary guy during the day but at night under the full moon I transform into One Eyed Willie the software pirate. Although my friends and I will deny it, we truly hate our 64's and Amiga computers. We despise Commodore, all the software companies, and other computer owners. Why else would we copy software?

For all these years we've been subconsciously planning the destruction of the computer industry. Step by step, our evil hands transform what could be a wonder machine into a weapon. We've hurt many kinds of computers not only by pirating software but also by creating and spreading viruses to unwary computerists. What fun!

We also help convert new users by giving them beta copies of what eventually becomes great software, but with their buggy versions they never find out the software's true potential (suckers).

Isn't life great, we came, we saw, we copied, and we destroyed. Long live piracy, death to prosperity.

Sincerely,
One Eyed Willie

P.S. I hope you intelligent people out there get the message.

I know I got it — I can see the glow of your halo from here!

All That Glitters . . .

Dear Mr. Sander:

I have typed in to identify one of the bars of false gold in your "Gold Mine" (June 1989). *Zak McKraken*: The person who sent in this information lied. I have played the Amiga version of the game and know that the way to open the door on the leg of the sphynx has nothing to do with the markings on the statue in the great chamber. Those markings open the hand of another statue in Mexico.

The markings allowing entry through the leg of the sphynx are actually found in the "maze": (one of the rooms in the great chamber). I'm sure you'll agree that this corrected information could save someone a great deal of time.

Observently yours,
Jason Cowan
Oshawa, Ontario
Canada

Thanks for this correction, although we hate to think that a contributor intentionally "lied". It's just one of those bits of fool's gold that Lou warned about.

Acknowledgement

An "unknown author" in Graham Kinsey's "Best of Amiga PD" has made himself known. Kevin Kyle of Franklin, IN is the author of the Sculpt-Animate 4D-*based ILB, which received honorable mention in the August feature. Congratulations, Kevin!*

LEAPing Around

To the Editor:

One Editor's comment in the Tips and Tricks column of the August issue of *Commodore Magazine* begs for a correction.

In the column in question, regarding the Calendar Maker program, you made reference to a "bug" in the program for the year 2000 which you state ". . . although evenly divisible by four is not a leap year." Please be advised that the year 2000 very definitely is a leap year.

Actually, the Calendar Maker program does have a serious bug, but it is the opposite of what you state. The year 2000 is a leap year, but century years not divisible by 400 (such as 1900 and 2100) are not. Yet, the Calendar Maker program treats all century years as leap years.

A brief history lesson in case you're interested . . . The calendar recognized and used by most of the western world today was first developed by Julius Ceasar in about 45 B.C. (the Julian Calendar). This calendar called for three years of 365 days followed by one year of 366 days, in perpetual cycle.

Although this calendar was a vast improvement over the chaotic system used previously, it still had one notable flaw . . . it averaged about 11 minutes and 14 seconds longer than the solar year. Over the course of several centuries this error accumulated, and by the late 16th century the Solar year was running about 10 days ahead of the calendar. This was particularly upsetting to Church leaders since the vernal equinox was occurring 10 days early, and Holy Days did not occur in the appropriate season.

In the year 1582, Pope Gregory XIII issued a decree dropping 10 days from the calendar to bring it into sync with the solar year. To prevent the same situation from developing again, he also decreed a modification to the calendar such that

Continued on page 80

Commodore MAGAZINE

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1200 Wilson Drive
West Chester, PA 19380
(215) 431-9259

Commodore Magazine, Volume 10, Number 10, October 1989.

Commodore Magazine is published monthly by Commodore Magazine Inc., 1200 Wilson Drive, West Chester, PA 19380. U.S.A. U.S. subscriber rate is $35.40 per year; Canadian subscriber rate is $45.40 per year; Overseas subscriber rate is $65.00 per year. Questions concerning subscriptions should be directed to Commodore Magazine Subscription Department, Box 651, Holmes, Pennsylvania 19043. Phone (800) 345-8112. Outside U.S. (215) 532-8687.

Activision

64: Here's a couple of games for the movie fanatics in the audience: **Ghostbusters II** and **Die Hard** will be coming your way in the fourth quarter. **Ghostbusters II**, like the film of the same title, has you battling the forces of evil in New York City. It seems that the restoration of an ancient painting has somehow brought its subject to life — a wicked medieval ruler named Vigo the Carpathian. Your enemy plans to bring back the dark ages and you are the only one who stands in his way. During the course of the game users drive the Ectomobile (through the city streets), face an army of ghostly foes, collect samples from a river of slime, and take control of a moving Statue of Liberty. Things like this can only happen in New York (or possibly California). Anyway, you also witness excellent special visual effects, like the painting coming to life, and a view of things through the eyes of the Statue of Liberty. I recently saw several sequences of the game, and it really looked great.



CATHY JERMAINE

Die Hard, another movie simulation, has you assuming the role of John McClane (an off-duty policeman in the wrong place at the right time.) International terrorists have just taken over the building he's in and cut off all possible means of escape. So the player is one against many from the very beginning. To make matters worse, the bad guys have already taken a number of hostages. So how does a good cop survive this terrible ordeal? By looking around for clues and weapons and tackling his enemies one at a time. But **Die Hard** is also a race against the clock. The player must win this private little war before the terrorists crack the security codes and open the main vault. While all this is going on he also has to rescue the hostages and save his wife from Hans, the unscrupulous leader of the group. When all is said and done, **Die Hard** is an excellent blend of fast moving arcade action and beautiful digitized pictures from the movie.

Accolade

64: Owners of **Test Drive II** take notice! Two new accessory disks will be coming your way sometime this Fall. In **Muscle Cars** players drive the hottest sports cars of the 1960's. **European Challenge** contains the most scenic and grueling roadways of Europe.

The Cycles: International Grand Prix Racing is slated for release in the fourth quarter. The developers of **Grand Prix Circuit, Test Drive,** and **The Duel: Test Drive II** have put together the ultimate motorcycle racing game. This unique program features a behind-the-controls point of view and three separate performance classes (500cc, 250cc and 125cc), with five skill levels per class. **The Cycles** also contains 15 international race tracks located in places like Holland, Great Britain, Japan and Monaco. Enjoy the local color, but nine computer-controlled world-class opponents want to win the race as badly as you do. So don't make any mistakes.

Heat Wave: Offshore Superboat Racing will also be out before Christmas. It took a show like Miami Vice to bring this little known sport to the public eye. Now it's your turn to drive a 600 HP Superboat, scorching the waves at speeds exceeding 200 mph. The courses feature 3D polygon filled-graphics of the things you would see at the various locations (like buoys and buildings in the distance.) Incidentally, you will be racing off Miami and Ft. Lauderdale, flying across the water of Biscayne Bay, and traveling down a stretch of the Mississippi River. If you mess up, your craft will flip or burn up an engine. A victory can earn you the right to display the coveted number 01 on your hull. So move fast, avoid obstacles, watch the weather, and keep an eye on the other racers.

I don't have much information on the subject, but how would you like to fly with the Blue Angles (the famous military flying team)? The user will participate in precision flying maneuvers and eventually learn the secrets of these sophisticated aircraft. This exciting new flight simulation will appear on the market late in '89.

Amiga: Look for Amiga versions of the programs mentioned above about the time the 64 products come out. **Hardball II,** another interesting game, should be well received by the public. First of all, it retains the elements of **Hardball** that everyone seems to like. New features include: player drafting, instant replays, league play, tailored team construction and different points of view (from either behind-the-batter or behind-the-pitcher). **Hardball II** also contains updated graphics and sound effects, a save option (that allows you to store a game in progress), more player stats and a team editor. I loved the original **Hardball** game which is one of the best selling baseball programs of all time. But take a look at its sequel because it promises to be something very special.

Coming in 1990: Accolade will be entering the world of strategy games with a new offering in the first quarter that places the player on another world, at another time. Tom Loughry, the designer of **Steel Thunder**, will release another action/ simulation product early in 1990. Jack Nicklaus Productions also has a new project in the works. It will be introduced to the public during the opening months of the year.

Cinemaware

I recently spoke to Bob Jacob, the president of Cinemaware, to learn all about their upcoming titles.

Jermaine: What can we expect to see from Cinemaware in the coming months?

Jacob: **TV Sports Basketball** (for the Amiga) will be available sometime in October. I believe it will be the first Amiga 5-on-5 basketball game to officially hit the market. Our basketball program features five different slam dunks, free throws, fouls, technicals and so on and so forth. The game also contains a lot of digitized voice. When the ball is blocked, for example, the announcer says "rejected." You can actually hear the crowd reacting to the game, as the cheerleaders scream out their support for the teams. In **TV Sports Football** we wanted to add more digitized sound but simply ran out of memory. As our people sat down to design the basketball program, they made a conscious decision to reserve more memory for sound effects. When all is said and done, it will sound like an authentic basketball game (right down to the squeaking of the shoes). basketball games feature players that all look alike. In **TV Sports Basketball** guards are short, centers are tall, and forwards are somewhere in between. Some of figures resemble Jordan, Bird, Kareem and other roundball celebrities. The arch of the shot also varies from player to player.

Unexpected visual displays, like the ones found in **Football** are also present in our basketball game. So don't be surprised to see an agitated coach throw a chair across the floor from time-to-time. A 10-minute ticker provides the scores of other games, already in progress, around the league. There will be physical mismatches on the court, and we even have an all-star game.

Jermaine: Is the **Basketball** interface similar to the one used in **Football**?

Jacob: No, because the requirements of the sports are totally different. In football, for instance, it's basically a question of finding someone open and throwing him the ball, having that player run to the goal, blocking, rushing, kicking, etc. Basketball has half as many players to worry about. It challenges a team to move the ball down-court, where someone can shoot or go in for the slam dunk. Then there's a matter of fouling, charging, dribbling, etc. They both share certain elements, like passing the ball, but each sport has a completely different objective. So their interfaces had to be different.

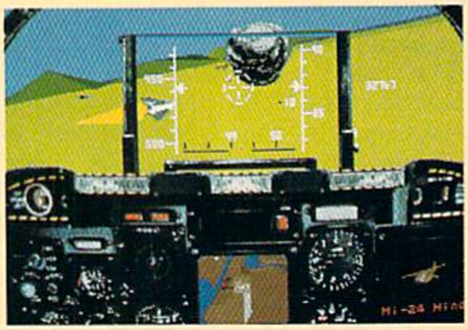
Basketball contains an advanced algorithm that cycles through your players looking for open individuals. When a player breaks free of his defender we quickly make it apparent to the user. If that guy eventually gets the ball, he suddenly has the option of throwing a pass, going in for the slam dunk, or taking an open shot. This is the way real basketball is played and we've kept that element alive in the game.

Jermaine: You've mentioned **TV Sports Football** several times. I'm sure readers are wondering if it will ever be released for the 64?

Jacob: It's funny you should mention such a thing. Our people are presently working on the project and it should be shipping later this year. Incidentally, the 64 graphics of **Football** are sensational. They closely resemble what we did on the Amiga.

Dynamix

Amiga: How would you like to fly the ugliest, most indestructible aircraft in the world today? Of course I'm talking about the A-10 Thunderbolt II — also known as "the Warthog." In **Tank Killer: A-10 Thunderbolt** the user sits behind the controls of this incredible engine of destruction. By the way, the cockpit scene is a digitized picture of the real thing. The control system is equally impressive and features easy-to-read instruments, auto-landing and take-off, automatic weapon selection and the latest CRT technology. The windshield also exhibits an advanced heads-up display (HUD). This equipment offers thermal imaging (infared night vision), a collision warning device, a special laser guidance system (for your weapons) and smart target



I.D. Once the game gets off the ground (sort of speak) you'll take your craft over smoking battlefields, blasting enemy tanks with a 30mm cannon. There are actually more than 26 different vehicles and targets in the program. It's also interesting to note that each of them has their own armament and reaction to your presence. The program also features about 8 external views of the plane (for people who enjoy watching things from different camera angles). I personally like the program because its digitized pictures are great, the sounds are superb and it seems to do everything I expect from an A-10 Thunderbolt simulation. I give this program 4 1/2 stars (on a scale of five.) It should be landing in stores sometime in December. Coming in 1990: An advanced stealth fighter has been stolen, its brilliant designer is missing, and Viper (the powerful organization that committed the crime) is using the plane to blackmail our country. This operation is too big for James Bond, so let me introduce you to **David Wolf: Secret Agent**. Assuming the role of Wolf, you participate in a series of exciting adventures. They include an action packed car chase, a freefall skydiving incident, hangglider combat and an aerial engagement (as the pilot of the world's most sophisticated aircraft.) **Secret Agent** is an incredible work of art. It features digitized graphics, digitized sound effects, smooth animation and an excellent storyline. In the skydiving sequence, for example, you free fall down to an enemy agent and fight him for his parachute. In another part of the program you actually hear the sound of machine gun fire. The game also contains a realistic hangglider simulation and typical James Bond romantic scenes. **Secret Agent** is the most impressive demo I've seen in recent months, and it's coming to an Amiga near you (during the early months of 1990).

Michtron

Amiga: Mike Breggar strikes again! If the name doesn't ring a bell, maybe you've heard of his earlier achievements: **Prime Time**, **The Twilight Zone** and **The Honeymooners Game**. And now the mad doctor (a podiatrist by trade) is about to release three new game designs on an unsuspecting world. Look for them early in the fourth quarter.

Oddball is billed as "The greatest sport never invented." It's basically a combination of elements from hockey, golf, tennis, billiards, soccer and even water polo. The game is played on an unusual surface. It starts out as wood, but quickly changes to ice, grass and eventually back to wood again. As **Oddball** begins, the user selects a team of ten advanced robots. Five of them will play the game while the others hold the bench down. Each robot has a list of personal statistics that reflect his present shooting percentage, ball handling ability, speed, stamina, etc. Use this information to put together your team, but statistics change rapidly and you need to have a well rounded group. As coach, it's your job to initiate the plays (both offensive and defensive.) **Oddball** contains a complete playbook but the consumer has the option of using his own strategies. Once you take care of these options, it's time to start the game. The players on the field consist of two Forwards, two Backwards and a Glovehead (which is sort of a center or goalie.) Your mechanical men play in an area that seems to resemble a soccer field — the main difference being a small door in the middle, which allows the **Oddball** to enter the game. This ball is very

unusual because it walks around aimlessly until somebody touches it. The first group to grab the ball is the offensive team, trying to get it to the goal as quickly as possible. But each coach has a secret weapon — two invisible time bombs that can be planted anywhere on the field. The problem is you never know when they are set to go off. So place these bombs in popular locations and avoid those areas as much as possible. If you're lucky, a well placed bomb will disable a rival player or two. Yes, **Oddball** is a rough sport to master, but it sounds like a lot of fun.

Here's a hot bit of news that even the *National Enquirer* doesn't know: the Wumpus lives! In **Hunt For The Wumpus** the player confronted this terrible creature in its lair (a 20 room cave with three connecting tunnels). But the beast survived the wounds of your five crooked arrows. In fact, there's a rumor going around that Elvis nursed it back to health (near a truckstop in Michigan) all these months. Anyway, the creature is back, but it's split into two separate beings. This makes your task twice as hard to complete. The new system of caves is 50% larger and each Wumpi (plural for Wumpus) must be killed in his own personal cave. And now for the good news — you have living bullets to use against these monsters. Puzzlements, another new feature, allow you to earn extra bullets and valuable coins. These amusing little challenges range from simple word puzzles to arcade game shootouts. I hear the program also offers state-of-the-art graphics, sounds and music. One more thing should be said here: the Wumpi will get ya if you don't watch out.

Agatha Christie said it best: "You are cordially invited to take the train ride of your life ... or shall we say death". During the early 1900's, the **Orient Express** was the "in" place to be. It featured the best of everything and attracted an interesting clientele (the pillars of society, wealthy royals, con men, spies, etc.) A murderer lurks among them, and it's your job to determine who that person is. The user has the option of becoming one of six famous sleuths on this trip. Each detective also has his (or her) own special abilities, which can make it easier to solve certain cases. One of them might question suspects better, while another may be super observant. Whatever the situation, the user (and up to four of his friends) must thoroughly investigate every murder scenario. There are five complete mysteries in the game featuring eight unusual suspects and eight possible motives for the crime. The graphics of the program are good, and the sound effects really grab you. Sounds range from the scream of a victim to the rattling of a train in motion. If you're a murder mystery fanatic, this one's for you.

Psygnosis

Amiga: Here's a must for your 1989 Christmas list. **Beast**, a working title at this time, is a whole new gaming experience. The player transforms into a savage creature, fighting his way through a massive forest and into the castle beyond. The program features 4 different scenarios, each one approximately 70 screens in size. They include the great forest, under the tree, inside the cave and the interior of the castle. It's even possible to take a side trip now and then (like down a well shaft, for example). Your figure can run right/left, kneel, jump, punch, climb up ladders, kick and so on. You can also grab objects and put them down. When these items are weapons they can be either traditional (like a sword) or magical in nature. So punch your enemies, seize powerful weapons and explore anything that seems to have an opening. Here's some additional facts about the game. **Beast** contains 2080K of code (on two 3 1/2" disks). The program scrolls at a smooth 50 frame/sec. and displays up to 128 colors at any given time. There is also approximately 900K of music in the game. Any way you look at it, **Beast** (or whatever they decide to call it) will probably set the standards for future Amiga game projects.

*Editor's Note: The name is now **Beast of the Necropolis.***

Konami

64: Wanted: professional vampire hunters! Dracula is on the prowl again, and someone has to stake him out (sort of speak). All applicants must be very brave and willing to battle demons, goblins, bats and the like. Interested parties can enter the count's domain (**Castlevania**) sometime in December.

Blades of Steel will also be available late in '89. This unusual Hockey simulation challenges the user to become each member of his six man team during the course of a single game. So you actually become the goalie when his talents are needed, and other people when the puck moves in their direction. As soon as the hard rubber disk officially hits the ice the action shifts into high gear. When tempers flair, off come the gloves and a one-on-one fight ensues. The computer opponents are also pros and really give you a workout. I give **Blades of Steel** the thumbs up sign because it looks good, sounds good and the game play is great.

Amiga: In October, **Metal Gear** and **Teenage Mutant Ninja Turtles** will appear in stores around the country. As **Metal Gear** begins an evil ruler has activated the most powerful weapon on Earth and it is your job to destroy that incredible device. Players have to enter the enemy base, neutralize the guards, obtain security codes and use conventional weapons (like machine guns, grenade launchers, plastic explosives, etc.) to penetrate deeper into the stronghold. You're also an expert in hand-to-hand combat, so they picked the right man for this dangerous assignment.

On the other hand, **Teenage Mutant Ninja Turtles** (TMNT) is an excellent replica of the popular cartoon series of the same name. It features four famous heroes in a half shell: Leonardo (swinging his mighty Katana Blade), Raphael (carrying a needle tipped attack tool), Michaelangelo (manipulating a deadly pair of Nunchukus) and Donatello (working over felons with his versatile Bo stick). Users can become any member of the group, at any given moment, as long as they haven't been taken by Shredder's thugs. It's also possible to free captured comrades by locating them and touching their hand. Recent events have determined your goals in the game. April, a close friend of the turtles, was kidnapped several hours ago. The group has to rescue this lovely lady before Shredder (your worst enemy) can brainwash her into joining his army. This treacherous villain also possesses the life transformer gun, the one piece of equipment that can restore Splinter (your friendly neighborhood rat) back to human form. So there you have it. Shredder's forces are terrorizing various New York sites, and our heroes must stop them at any costs. **TMNT** has a lot of potential because it looks like the famous turtle cartoons and offers a number of challenging scenarios. It should be the hit of the holiday season. **Castlevania** and **Blades of Steel** should also be in consumer hands late this year.

Coming in 1990: **Super Contra** is slated for release (on both the 64 and Amiga) during the first quarter of 1990.

News by John Jermaine

Compiled by Louis F. Sander

Lou Sander's Tips & Tricks

This was an exciting month for me—I had lunch with Heloise, of the famous Hints From Heloise, *the world's premiere column of user-contributed tips. She and I exchanged copies of our recently-published books, and we discussed the ins and outs of purveying tips to readers around the world.*

I also saw the first copies of the Lou Sander's Tips & Tricks *book at the local Waldenbooks store. If you want to buy it, you can definitely get it through your local book store. Ask for ISBN 0-8306-3192-5. You can get it by mail by calling (800) 822-8158.*

And as if that weren't enough, we finished judging the entries in our recent programming contest. Over 200 programs were received, but an initial screening winnowed them down to a mere 157.

They were divided into these subject areas: 22 financial, 22 drill and education, 18 mathematical, 15 printers of labels and forms, and 12 for doing calculations in some specific field. There were also 11 musical programs, 11 filing systems and alphabetizers, ten clock and calendar programs, eight automobile programs, six for health and fitness, and four for astronomy. Rounding out the group were four programs for lottery and other wagering, three for typing and keyboarding, three for averaging grades, and eight on miscellaneous subjects.

As required by the rules of the contest, every one of them performed a useful function. Several are printed below.

Oh yes—the $100 Grand Prize Winner is The Money Machine, by R. Gregory Shaw. It appeared in last month's Tips & Tricks.

To share your own tips with our readers, send them to:

Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237

I read every submission, but those that are printed or typed get by far the most careful reading. If your tip includes a program, you'll improve its chances by sending a disk and a printout.

Successful contributors get to see their name and work in print, plus a check for $10–$50.

Flashcard: This is a variation of a program I wrote which helped raise my son's math average from near failing to an "A." It provides drill on elementary multiplication problems.

The prompts ask you for the maximum time to be allowed for the student to answer, and for the highest factor to be used in the problem. The second factor in the problem is always between one and 12; you can change it by changing the 12 in line 140.

When you run the program, a multiplication problem will appear on the screen. Type in the answer, but do not press RETURN. You'll be told if the answer is wrong or right; if it is wrong, the correct answer will be displayed.

Press F7 to end the session. The computer will display your percentage of correct answers.

Steve Stinson
Ontario, NY

```
100 PRINT"[CLEAR,RVS,WHITE,SPACE7]
    FLASHCARD - STEVE STINSON[SPACE8]"
    :POKE 53280,0:POKE 53281,0
110 A=5:INPUT"[DOWN2,SPACE10]
    TIME LIMIT (SEC)";A
120 L=12:INPUT"[DOWN,SPACE9]
    HIGH FACTOR LIMIT";L
130 PRINT TAB(11)"[DOWN8]
    PRESS -F7- TO STOP"
    :FOR TT=1 TO 1000:NEXT
140 C=INT(RND(0)*L)+1:B=INT(RND(0)*12)
    +1
150 Z=B*C:Q=INT(LOG(Z)/LOG(10))+1
    :PRINT"[CLEAR]"TAB(14)"[DOWN11]
    "C" X "B" = ":A1=TI
160 GET A$:IF A$=CHR$(136)THEN 260
170 IF A$<>""THEN 220
180 IF TI<A1+A*60 THEN 160
190 PRINT TAB(15)"[DOWN]OUT OF TIME!"
200 PRINT TAB(13)"[DOWN]
    THE ANSWER IS"Z:J=J+1
    :FOR Y=1 TO 2000:NEXT
210 E=0:FOR Y=1 TO 1000:NEXT:GOTO 140
220 E=E+1:PRINT TAB(28+E)"[UP]"A$
    :F(E)=VAL(A$):IF E<Q THEN 160
230 IF INT((F(1)*10^(Q-1))+(F(2)*10^
    (Q-2))+(F(3)*10^(Q-3)))=Z THEN 250
240 PRINT TAB(18)"[DOWN]WRONG"
    :GOTO 200
250 PRINT TAB(19)"[DOWN]RIGHT":X=X+1
    :GOTO 210
260 PRINT"[CLEAR]"TAB(12)"[DOWN11]
    GRADE = "INT((X/(X+J))*100)"%
    [DOWN9]":END
```

Concrete Pricer: If you are planning any concrete work, this program will figure the yardage and cost of the concrete. If you'd like, it will give you a printout of your figures.

The only drawback that I see is that it is only good for a square or rectangular slab, and I'm sure you know that not all

concrete is poured straight. But given the three-block limit for the program on the disk, this is what I came up with.
Timothy S. Ricker
San Bernardino, CA

```
100 PRINT"[CLEAR,RVS,SPACE2]
    CONCRETE PRICER - TIMOTHY S.
    RICKER[SPACE3]":POKE 53281,0
110 PRINT"[CYAN] THIS PROGRAM WORKS
    OUT THE YARDAGE AND"
120 PRINT" COST OF A RECTANGULAR OR
    SQUARE SLAB":PRINT" OF CONCRETE."
130 PRINT"[DOWN,YELLOW]
     ENTER THE THICKNESS,
     LENGTH AND WIDTH[SPACE3]
    OF YOUR SLAB:"
140 INPUT"[DOWN,L. RED]
     THICKNESS IN INCHES";G
    :INPUT"[DOWN] LENGTH IN FEET";A
150 INPUT"[DOWN] WIDTH IN FEET";B
160 INPUT"[DOWN] DOLLARS PER YARD";C
170 X=G/12:S=A*B*X/27:Z=S*C
180 PRINT"[DOWN,WHITE]";S;
    "CUBIC YARDS":PRINT"[DOWN] $";Z;
    "CONCRETE COST"
190 PRINT SPC(6)"[DOWN2,RVS,L. GREEN]
     WANT A PRINT OUT (Y/N)? [L. BLUE]
    ";
200 GET N$:IF N$<>"Y"AND N$<>"N"THEN
    200
210 IF N$="Y"THEN 230
220 IF N$="N"THEN 350
230 OPEN 3,4:CMD 3
240 FOR J=1384 TO 1784 STEP 40
250 TR$=" "
260 FOR K=0 TO 39
270 S=PEEK(J+K)
280 IF S<32 THEN S=S+64
290 TR$=TR$+CHR$(S)
300 NEXT K:PRINT TR$
310 NEXT J
320 PRINT CHR$(10)
330 PRINT#3
340 CLOSE 3
350 END
```

Envelope Addresser: This puts the address and return address onto a standard business envelope. To use it, load the program, then insert an envelope into your printer, with the print head aligned with the top of the envelope.

It's often best to open the flap of the envelope before inserting it. Also, if your printer stops printing when it's out of paper, you should back up the envelope with a sheet of paper.

When the envelope is in place, turn on the printer and run the program. Prompts will elicit the required inputs, at the end of which the envelope will be printed.
Robert E. Wilson
West Hills, CA

```
100 PRINT"[CLEAR,RVS] ENVELOPE
    ADDRESSER - ROBERT E. WILSON
    [SPACE2]"
110 REM PROGRAM WILL PRINT RETURN
    ADDRESS AND ADDRESS ON LEGAL SIZE
    ENVELOPE
120 REM DIFFERENT SIZE ENVELOPES CAN
    USED BY CHANGING LINES 370,390,
    410,430
130 OPEN 1,4
140 PRINT CHR$(159)
150 PRINT CHR$(18)"ENTER RETURN
    ADDRESS"
160 PRINT
170 INPUT"NAME";A$
180 INPUT"STREET ADDRESS";B$
190 INPUT"APARTMENT NO.";K$
200 INPUT"CITY";C$
210 INPUT"STATE";D$
220 INPUT"ZIP CODE";D
230 PRINT
240 PRINT CHR$(158)
250 PRINT CHR$(18)"ENTER MAILING
    ADDRESS"
260 PRINT""
270 INPUT"NAME";E$
280 INPUT"STREET ADDRESS";F$
290 INPUT"APARTMENT NO.";G$
300 INPUT"CITY";H$
310 INPUT"STATE";J$
320 INPUT"ZIP CODE";J
330 PRINT CHR$(154)
340 PRINT#1," ";A$
350 PRINT#1," ";B$;"[SPACE4]";K$
360 PRINT#1," ";C$;",";D$;D
370 PRINT#1,CHR$(13)CHR$(13)CHR$(13)
    CHR$(13)CHR$(13)
380 PRINT#1,CHR$(16);
390 PRINT#1,"32";E$
400 PRINT#1,CHR$(16);
410 PRINT#1,"32";F$;"[SPACE3]";G$
420 PRINT#1,CHR$(16);
430 PRINT#1,"32";H$;",";J$;J
440 CLOSE 1,4
450 END
```

Improved Envelope Addresser: Many readers like the way that these contests force them into learning good techniques for making their programs shorter. Here's how some of those methods can shrink the Envelope Addresser. To make things easy to follow, I retained the original line numbers wherever possible. Here's some further explanation:

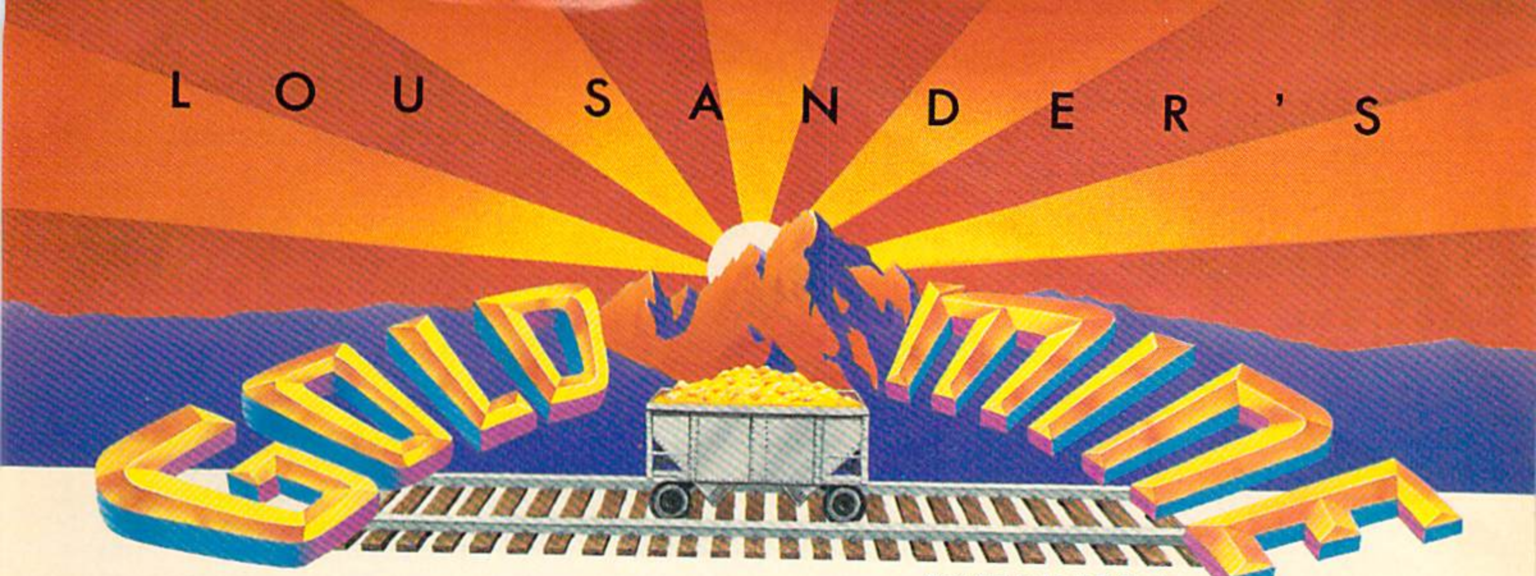
The REMs were converted to PRINT statements to make the program more user friendly. Six prompts, repeated identically for the return address and the address, have been put into variables in lines 121–126. They are used in lines 160 and 260.

In line 150 and throughout the program, the PRINT statement equivalents of control keys have been substituted for their CHR$() counterparts. In lines 160 and 260, the input variables have been changed to arrays, to allow the use of FOR . . . NEXT loops. A FOR . . . NEXT loop has replaced the repeated CHR$(13)'s in line 370, and repeated use of CHR$(16);"32" has been replaced by repetitions of T$, which was defined in line 127. (If you need to change the positioning of the address, just change the 32 in line 127, and the 6 in line 370.)

Finally, the OPEN statement has been moved to line 330, (to be closer to the actual use of the printer), and the optional END statement has been removed.

Overall, the number of lines in an already compact program have been reduced by a third. Nifty, eh?
Louis F. Sander
Pittsburgh, PA

Continued on page 78



Compiled by Louis F. Sander

As always, many of the Gold Mine's tips will work on any computer, whether it's from Commodore, Apple, Atari, IBM or elsewhere; others apply to only one machine. Don't forget that many tips require skill as well as knowledge.

And don't forget the Gold Mine book, which should be on the market as you read these words. It contains over 1200 tips on hundreds of exciting games. To order your copy, call TAB Books toll free at (800) 822-8158. In Pennsylvania, Alaska and other locations around the world, call (717) 794-2191.

If you have some nuggets to share with our readers, why not write them up and send them in? Stake your claim at:

The Gold Mine
P.O. Box 101011
Pittsburgh, PA 15237

Use a separate sheet for each game; put your name and address on every paper you send us. Neatness counts, and full-sized double-spaced printouts are preferred.

If one of your nuggets is printed, you'll get momentary worldwide fame, the knowledge that Gold Mine Rules, and a nice little $5 grubstake.

Alice in Wonderland: This is a kid's game that is good for anyone to play. I especially like the end.

Listen to all the cats and the people; they have clues that will help you win. At the Chessboard, use the Whisker to go through the door.
Ray Turner
Monticello, KY

The Bard's Tale III: If you have *The Bard's Tale II* as well as this game, bring over a Stone Blade for your Hunter and a Song Axe for your Bard. The Stone Blade will always turn a creature to stone when he is hit. The Song Axe can be thrown for a lot of damage.

If your party lacks good armor, have your Bard sing Sanctuary Score, which lowers the party's armor class.

If you have good armor, sing Rhyme of Duotime, which when in combat regenerates spell points. Within a battle, it gives all members of the party extra attacks.
Aaron Maupin
Fresno, OH

Battle Through Time: When planes or choppers drop bombs or missiles, shoot them to get 500 points. If the plane crashes, shoot it before it hits the ground—you'll get some nice bonus points.
Dave Kratky
Grand Valley, Ontario
Canada

Cauldron II: If you have nerves of steel but still can't accomplish anything, here are a few hints.

It's easier to collect items by starting at the bottom of the castle and moving upwards. Start with the scissors, then the axe, goblet, crown and shield. Cut the witch's hair and you'll finally reach the book. Now you can drop down to the cauldron.

If you have a quick finger, press the R key just before you die. The game will automatically relocate your pumpkin at the start of that screen, and you will not lose a life. If you're quick, you can make your men last forever.
Fred Engell
Address Unknown

Cutthroats: If you're having trouble opening the underwater safe without ruining the stamps, just take it to the air-pocketed room upstairs. Drill it, slap on some putty, head to the surface, and enjoy your treasure!
Michael Gatto
Los Angeles, CA

Deja Vu: When you're in the casino, play the slot machine on the right. Keep playing until you win.

The key to Ace Harding's and the doctor's office is in the bungalow. To get in there, just shoot the door down.

When in the doctor's office, shoot the filing cabinet open and find the file on the drug in the drug cabinet. If you have the syringe, use it to inject yourself with the drug. As time passes, you'll start to remember everything.

If you found a live fat lady in the trunk of the car, drag the gag from her mouth and use the syringe to inject her with sodium pentathol. She'll give you some valuable information.
Manny David
Bronx, NY

Dreadnoughts: Here's a way to try your hand at convoys. Go east from Bergen until you run into serious trouble. Punch all sorts of exotic keys until the machine freaks out. Keep punching until you see any "normal" screen, and go from there. You'll be at game start time, but halfway out in the Atlantic with no contacts.
Jimmy Williams
Lexington, KY

Echelon: If you are damaged by enemy fire or by teleporting an explosive device on board, you can fix your ship without returning to base. Go into data link mode and save your game. Load the game again, and you ship should be repaired. (It doesn't work if your data link is damaged).

In the patrol zone, some of the objects turn out to be thermonuclear warheads, which destroy your craft in an instant. I've located two of them, one in area F3, sector I11, and another in area F6, sector L11.
Alex Antonio
Dallas, TX

F-19 Stealth Fighter: For maximum stealth, fly below 500 feet or above 32,000 feet, with the throttle reduced to the middle dot reference.

Always substitute extra fuel for the HARM missile load. Aircraft damage nearly always results in a fuel leak, and the extra fuel gives you more options.

The best way to shoot down fighters on your tail is to apply full power and pull back on the joystick. As the fighters come into view, your missile system will lock on and you'll be able to shoot accurately at them.

Be alert for fighters that follow you back to the carrier. They will fire missiles at you during your landing approach.

Flying under 500 feet to the target requires constant attention, but can be done if you maintain a constant pitch setting of seven degrees, with power set to the middle dot reference.

Carrier landings are easier if you maintain a constant pitch of 10 to 14 degrees while adjusting the throttle for rate of descent.
Glen Young
Renton, WA

Future Knight: To get unlimited lives, simultaneously press keys BUG87 when you see the screen of the presentation.
Patrick Cot
Quebec City, Quebec
Canada

GFL Football: When you're on defense, choose a nickel defense and move your joystick to a blitz above or below nickel. Now watch what your opponent picks. If he/she goes with a pass, don't do anything. But if he/she chooses a run, press your fire button. This way, you shouldn't get burned by the offense.
Devin Finney
Shelton, WA

Guild of Thieves: To get into the Undertaker's establishment, break the glass in the window. There you can take a coin which will help you get into the Zoo.

To pass the spider in the Hothouse, you must do three things. First take the Jam Jar from the Kitchen. Then open it and take it to the stable to get some flies into the Jam. Finally, go to the Hothouse and drop the jar to kill the spider.

Rub your feet with the Succulents from the Hothouse, and you can go through the Hot Coals.
Wlodek Kuczynski
Warsaw, Poland

The Hitchhiker's Guide to the Galaxy: To recall your senses after arriving on the first ship, smell until you can make out a faint shadow. Examine it, and you'll be free to roam around.

To get past the tractor that is demolishing your house, lie in front of it. Then type WAIT or continuously press Z. After a while Ford will come and talk to Mr. Prosser, and you will automatically stand up.

After arriving on the second ship, listen until you can hear the humming of its engine. You'll then be free to move around.

Persistence is the key to getting into the engine room. After a while, the computer will let you in. After you're in, you need to look around a few times before the computer will tell you what is there.
Jeremy Hubble
Belton, TX

International Soccer: For an easy goal, go to the bottom of the screen. Face your opponent's goal just in the corner and kick the ball. If you're positioned correctly, the goalie will jump straight up, and the ball will pass beside him into the goal.
Patrick Sinnott
Commugny, Switzerland

Impossible Mission II: After you've found all six of the good tapes, go to any of the doors between the towers. Be sure you have some snoozes. Play all six tapes, then push up.

When you're in the last room, snooze the robots and go to the three computers in the middle of the screen. Take the computer on your right, and you've solved the game!
Kyle Bastrup
Sequim, WA

Jet: If you want to take off, but don't have enough runway space, try this. Hold down your brakes and bring your thrust all the way up. Release the brakes, and you should get off the ground using less than half the usual runway distance.
Peter Pramataris
Farmingdale, NY

Karnov: One problem with this game is that you can find many items during play, but the instructions don't tell you how to use them. To find out, just move the red box onto the item you're interested in, then press the Y key.

Are you bored with going the same old way on the second level? If so, stop at the cave entrance after you destroy the pillars. Using the ladder will reveal a whole new way to complete the level—above the caves rather than through them!

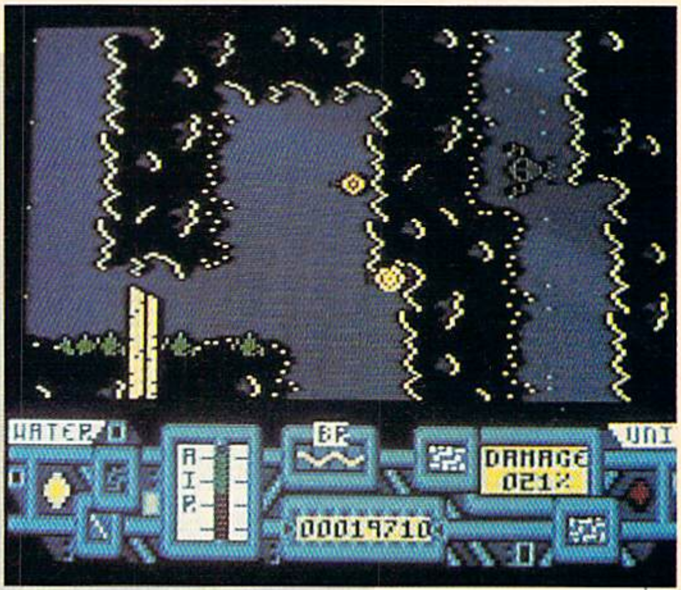
If you think the Volcano level is impossible to pass, notice the color that you're standing on when it starts. Also notice the color of the cave atop the volcanos. In my game, they're both purple. Just use the ladder to jump onto the purple atop the volcanos. You'll be surprised to hit solid ground.
Jason Putman
Niagara Falls, Ontario
Canada

Continued on page 62

Reviewed by Jeffery Scott Hall

Main Frame

Computer: Commodore 64
Company: MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
Price: $39.95



One major feature of your space suit is that it gives you super human abilities, allowing you to jump higher, run faster, and shoot quicker.

Main Frame, from MicroIllusions, puts you in the middle of a hostile computer take-over on planet Earth, where machines are threatening world domination. It's up to you to help de-bug our computer by destroying it before it destroys us.

Your mission starts on the Orbiter. This Orbiter is an uncompleted space satellite which hasn't yet been linked to the evil master computer known as TriComplex III. Inside the Orbiter is a space suit which you will need to get before starting your take over. Your space suit contains an access computer called Comm-Link which allows you to access Orbiter's commands. The commands available to you include: Assemble/Disassemble Assault Unit, Beam up/down, Raise/Lower Defense screens, Place/remove scan unit, and Transport To Scan Unit.

One major feature of your space suit is that it gives you super human abilities, allowing you to jump higher, run faster, and shoot quicker. The bad news is that it requires Power Pods to function. These Power Pods run most everything on Earth now, including Orbiter, and can only be found on the planet's surface. Also on Orbiter you will find a control station. From here you have two options which are: Transfer Power either to or from your reserves, and Medic Center, which allows you to rejuvenate yourself using Power Pods. Now, let's beam down and take a closer look at what awaits in our journey.

Once you have beamed down to the surface, you must first search for three assault devices: The Air Unit that attaches to your suit allowing you to fly around, the Land Unit which puts you inside an armored tank, and the Water Unit giving you a customized submarine for deep sea exploration. When you've located all devices, you will have at your disposal all the resources needed for turning off TriComplex III.

Most of the time you will be fighting on the planet's surface, but sometimes you will find yourself deep within vast underground caves. While on the planet you will need to find and collect four different objects: Power Pods, Fuel for operating the assault units, Air Tanks used for underwater exploration, and Micro Cards used to de-code security codes inside buildings.

While on the planet you will find many enemies that TriComplex III is controlling. Entities such as Battle Droids, Guardians, Mortars, and Laser Tanks will all attack you, and all can kill if you run into them while your power supply is low in the space suit.

At certain places on the planet's surface, you will find that your Comm-Link does not work. This is because TriComplex III is interfering with your transmitter, and is also using several Land to Orbit lazers to damage it in the process. In order to take out the lazers and destroy the interference, you must first obtain the Air Unit. Once this has been obtained you can fly through some of the defenses and destroy the complex that is causing this problem. However, this is only temporary, for TriComplex III will repair what you have destroyed and it's only a matter of time before the complex is operating again. So, make sure to take advantage of this time and use it wisely to plan some strategic lazer blasting.

In order to win the game, you must find the intake-pipe which leads to a chamber below TriComplex III's control room. Once you have found the pipe you will need the Water Unit to explore the area within. While you are traveling through this area you will use up a lot of oxygen so make sure you've collected as many tanks as you can find before starting your journey. When you've reached the end of the intake-pipe you will need to travel along the entire length of a narrow passageway. The next area you will find is the main control center for TriComplex III containing many security doors. Using the collected Micro Cards you must open the doors and find the four power switches and turn them off. However, in order to make things more difficult the switches have been hidden in certain rooms and activating a fake room will cause radiation to leak in and severely injure you. Your final goal is to turn off all four power switches of this awesome machine.

Summary

Main Frame is a very complex arcade style game which gives you non-stop action inside a computer system where you are the only bug it's ever encountered! I've been playing this game for about 50-60 hours and just now have managed to locate the intake-pipe. So while this is an arcade game, you can certainly tell that a lot of strategy has gone into it's design. *Main Frame* combines great sound effects, music, graphics, and action to make it the greatest story-arcade game I've ever found!

Reviewed by Jeffery Scott Hall

Times of Lore

Computer: Commodore 64
Company: Origin
136-B Harvey Road
Londonderry, NH 03053
Price: $39.95

Times of Lore, from Origin Systems, combines a unique blend of action and strategy as you stride to restore peace to the once non-violent kingdom, Albareth. After the game has loaded, a title screen will appear after which you must choose to either start a new game or return to an old *Times of Lore* adventure. Once your selection has been made, you will then find yourself reading a story about the kingdom of Albareth, while music plays in the background. You may skip the pages by pressing the fire button and go directly to the character screen where you get to choose a character for yourself. There are three character types; Knight, Valkyrie, and Barbarian, each with different areas of specialty, strengths, and weaknesses. Once a character has been chosen, you will assume his/her role and begin your journey into Albareth.



However, the main key to playing *Times of Lore* is not so much your movement as it is communication.



Once the game has started you will find your character at the top of the view window. To move your character, simply push the joystick in the direction you want to go. However, the main key to playing *Times of Lore* is not so much your movement as it is communication. The bottom portion of the screen contains eight different control icons which affect your character in many ways. These icons allow your character to talk with other people, examine objects, list the items you have in your possession, drop an item, pick up objects, use an item, offer an object to another character, and game options (current score, load an old game, save game in progress and pause the action).

If you are starting a new game your character will be standing inside the Frothing Slosh Tavern. In order to help you find your way around Albareth, a colored map is included. You may find your position on the map by locating the city of Eralan, which is the town that your character is in, and then setting out to explore on your own. You will find that as your journey begins, all the buildings and people serve a particular interest to your survival. To enter a building, simply walk over to the door and after it opens you will find yourself standing inside. Some buildings have more than one level, in which case you will find a set of stairs. Also, some buildings require you to have a certain object or key to enter. As you travel, time passes and the light will grow darker in order to give you the feeling of an actual day inside a real city. Also, you will most certainly find items and treasure which may be collected and used throughout the game.

Sooner or later you are bound to meet up with some enemies which are bent on killing you before your journey is completed. Depending upon the character you have chosen, you will start out with one basic weapon. To attack an opponent, simply face him and press the fire button to activate the weapon you're holding. The enemy will be defeated after a certain number of hits, which varies according to the type of character you're fighting and the type of weapon you are using. You will meet nine different classes of people in all, of which some may not be hostile. These characters include: guards, peasants, innkeepers, rogues, orcs, skeletons, ghosts, slime, and clerics. During your fight, you will probably sustain injuries from the attack. In order to keep track of your current health conditions, a candle is located in the lower right portion of the screen. As your health weakens the candle will melt until the flame is totally out, in which case your character will be dead.

Times of Lore is an excellent action-strategy game which can be enjoyed by any adventure player, either novice or expert. While *Times of Lore* might lean towards the introductory side, advanced players will still find challenge in exploring the lands of Albareth using their already acquired skills of role playing. The manual describes all the commands and characters in detail, but leaves the rest of the adventure up to you. Disk access times are faster than usual since they employ V-Max (a fast load utility) to help speed things up. This makes game playing more fun because you don't have to wait forever to see your new location. Since you will find the game to be fairly straight forward, no hints are provided. *Times of Lore* is one of the best adventure games I've ever played on the 64, and I think you will agree too!

Reviewed by Gary V. Fields

Super Disk Utilities

Computer: Commodore 128
Publisher: Free Spirit Software
58 Noble Street
Kutztown, PA 19530
Price: $34.95

It is a rare occurrence when the use of the adjective *super* in a title is appropriate—*Super Disk Utilities* is one of those pleasant exceptions. If you are a 1571 disk drive user and need, or just want, to dig deeper into the drive or double-sided disk storage, you can dig to your heart's content with the multiple tools found in this collection.

The utilities are accessed through a common menu: (1) Disk Copy, (2) File Copy, (3) CP/M Utilities, (4) Disk Editor, (5) DOS Utilities, (6) Drive Monitor, (7) '71 RAM Writer. To activate a utility you simply press a number and wait a few seconds until it is loaded into memory. You can return to this main menu at any time by pressing the ESC key. Each utility is similarly structured so *Super Disk Utilities* is easy to use because it is logically designed.

The disk copy option lets you copy entire 1541, 1571 or CP/M+ formatted disks using either one or two 1571 drives.

Because the file copy utility lets you copy up to 50 files consecutively, selecting and copying individual files couldn't be any easier. The directory of the source disk is displayed on screen, and you simply scroll through the names and select the ones you want to copy. After you have finished you can begin the action by pressing RETURN, or ESC to abort. I was pleased to find the file copy utility includes a safety check, so you can't accidentally overwrite an existing file. If the program detects an identical file name on the target disk, it will simply report the duplication on the screen and continue with the copying of the other marked files. This allows you the chance to examine the two files before inadvertently overwriting a valuable file.

If you are using the 128's CP/M capabilities you'll find the CP/M utilities valuable. They include a format, directory and format analyzer. The format option lets you format a disk to adhere to any CP/M MFM (Modified Frequency Modulation) format including Epson QX10, IBM-8 SS

Beyond being a useful product, *Super Disk Utilities* is a great teacher, allowing you to examine and fiddle with the structure and internal memory and storage secrets normally shielded from the casual computer user.

and DS, KayPro II and IV, or Osborne DD as well as GCR (Group Code Recording) using 70 tracks with 1328 disk blocks. The analyzing option displays information about the structure of each disk such as number of tracks, ID bytes, bytes per sector, etc. Again, the program makes use of either one or two drives and constantly monitors the status of the active unit.

The Disk Editor lets you view and write to specific tracks and sectors of a disk. To prevent you from accidentally editing the wrong disk, it constantly displays the name and ID number of the target disk as well as the status of the drive and the exact format of the disk. The editing screen shows both the hex and ASCII notation of the chosen track and sector, so you can write to the exact section using either notation type.

Disk editors are useful for changing information often impossible to edit any other way (e.g., the name of a disk, or special information in directories, or salvaging files or pieces of files from a damaged disk). The program's options include the ability to view specific areas of the disk, plus an easy way to scroll through other areas without having to input specific locations—a hassle I've encountered with other disk editors.

Most people will find the DOS utilities alone worth the price of *Super Disk Utilities.* This option activates 17 powerful tools which let you do everything from format a disk, bulk erase disk, rename files, analyze formats, write protect disk or lock and unlock specific files. If you've ever accidentally scratched a valuable program or file and didn't know how to reclaim it, the unscratch option will do just that. Or if you want to lock a file so that it can't be deleted, you can do that here as well. The utility even includes a "trash a track" option which lets you create your own disk protection schemes. I'm sure any 128 user will sooner or later develop a need for one or more of the these DOS utilities options, and will be delighted with the easy power they supply when that occurs.

If you are comfortable with assembly language, you can use *Super Disk*'s Drive Memory Monitor to assemble or disassemble any section of a 1571 drive's RAM or ROM. It works like the 128's own ML Monitor, so there is no reason to learn a new command structure if you are already familiar with that one. I suspect those hacker types (rather than casual computer users) who like to peek in normally hidden memory banks or love to hide program code in unusual locations will enjoy working with the Monitor and the 1571 RAM Writer. The two utilities are great for exploration. Combined they deliver enough power to let those so inclined, do some serious, if memory-limited, programming. Because the user's manual comes with a basic 1571 memory map (listing the location of the jump table, zero page, bus control, etc.) users will need to look elsewhere for more detail, or else map the drive's internal structure by simply monitoring each address themselves. I suspect many 128 users will re-experience the fun of legal hacking using these two tools.

Mark Brannon, *Super Disk Utilities'* author, not only saw a need for a full-featured utility program for the Commodore 128 and 1571 disk drive user, but had the knowledge and skill to bring the powerful collection to the user wrapped in a friendly interface anyone can master. *Super Disk Utilities* is a wonderful product, for which anyone needing to peek and poke at either a disk's storage surface or the 1571's RAM will find many uses. And just as importantly, you don't have to be a computer whiz to use the *Utilities,* features, but after tinkering with it and your 1571 a little you might qualify as one. Beyond being a useful product, *Super Disk Utilities* is a great teacher, allowing you to examine and fiddle with the structure and internal memory and storage secrets normally shielded from the casual computer user.

If *Super Disk Utilities* has any flaws they are speed and documentation. The copy utilities are not lightning fast, but

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Reviewed by Russ Ceccola

Under Fire!

Computer: Commodore 64
Publisher: The Avalon Hill Game Company
4517 Harford Road
Baltimore, MD 21214
(301) 254-5300
Price: $34.95
Under Fire! Mapmaker Disk
$25.00 ($20.00 with coupon in *Under Fire!*)

Think back a few years to the time when computer war games were few and far between. On the other hand, board war games were numerous. You could go to any hobby or strategy shop and find any number of board war games that covered a certain time period in history.

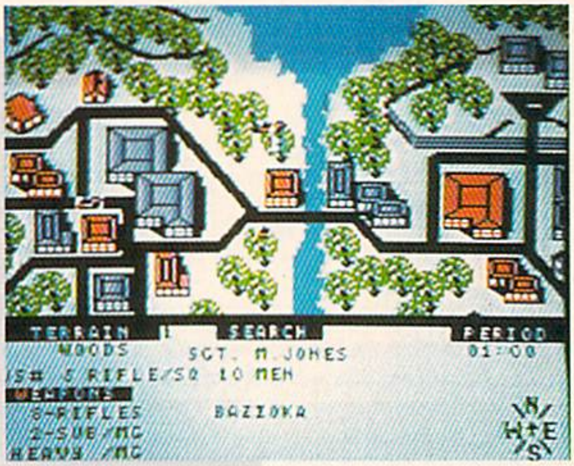
Avalon Hill was one of the pioneers in board war games. Their games had the slickest packages and were the easiest to find. Avalon Hill enhanced their reputation by continuing to support their board games; you could find additional scenarios and units for a game in the Avalon Hill catalog.

When computers came into the picture, Avalon Hill stayed at the forefront of the new technology. At the time, the Commodore 64 was the most popular home computer, and the majority of the Avalon Hill computer war games were available on cassette format only. (Hold on to those cassette games; they are destined to become relics of the computer age and/or collector's items.) Eventually, war games began to come out on diskette.

Around this time (1985), *Under Fire!* was released for Apple computers. It was a pioneer in the war game world in that it was one of the first games devoted entirely to tactical combat, using individual squads, guns, tanks and leaders. An adaptation of the game play of the Squad Leader board game designed by the same person, *Under Fire!* was only recently released for the Commodore 64, with many improvements included. The game is still as fun to play as it was a few years ago and is still unique in the computer war gaming world. Believe me when I say that with *Under Fire!* you can set up any kind of tactical battle imaginable, from all-armored exchanges to squad-to-squad engagements. The choice is yours!

Under Fire! allows you to use either a joystick or the keyboard to enter commands and select options from the menus

If you size up your locations, keep supplies coming, check your line of sight and prepare yourself for surprises, you will eventually "win" the game.



that comprise the bulk of the game play. The war game has a unique mode of play in that you make the movement selections for your units for a given turn all at once and only enter combat commands at certain periods in a game turn that you choose. A game turn consists of 24 periods in which units can move.

Within a turn, there are a Movement Phase, Execute Orders Phase and Unit Organization Phase. In the Movement Phase, you select the movement patterns for all of your units. In the Execute Orders Phase, you let loose the computer to move your units as you specified, period by period. At certain periods in the turn, combat takes place and you must enter combat orders, if you (instead of the computer) are controlling combat for your units. There are two, three, four or six combat phases in a turn, spread evenly throughout the turn. In the Unit Organization Phase, you can integrate units, bail men out of vehicles, drop supplies to relieve burden or pick up weapons or supplies—all at the end of each turn. There are ten turns in the scenarios that are included with the game. In your own scenarios, there can be as many as 30 turns. After all turns are completed, a Victory Phase takes place.

The game avoids the standard "move-and-fire" play to which most war gamers are accustomed. In addition to the game play, *Under Fire!* attempts a new concept in the Victory Phase. The computer does not say who wins or loses. Instead, all of the two sides' units' positions are revealed, as well as their general orders, and it is left up to the players to debate who is the winner of the scenario. This allows more freedom of interpretation of the results.

Suppose that a team's general orders were to occupy an objective area, and the number of units at his command was significantly less than the other team's total. If ten out of his 15 units are within the objective area, could you consider this a victory, taking into account the fact that his units were vastly outnumbered? Questions like these were left to the player(s) to decide. This approach is different and has its merits.

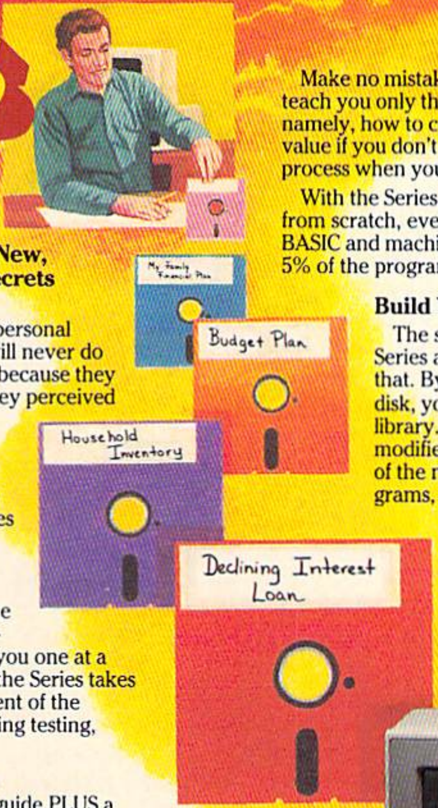
Under Fire! allows you to choose all of the relevant options that will color your scenario. Options such as game scale, number of combat phases, season, human or computer control of your opponent, who controls combat options (player or computer), scenario, general orders and nationality are all part of the Setting Up Phase. After all of these options are selected, the game begins. You can examine your units if in a pre-set scenario or buy units with "points" and place them on the game map in a design-your-own scenario. After this Pre-Set Units Phase is over, the first turn begins.

Under Fire! relies heavily on how much your units are burdened, how good the units' morale is, how well each unit is supplied with weapons and ammunition, the general orders given to the team, line of

Continued on page 18

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sight to the enemy based on the terrain, unit density and combat position. If you can keep these things under control, you will have no problem with *Under Fire!* Because the game is played on a tactical level, it is more complex and you must make your decisions carefully, particularly on movement and firing at the enemy, to be sure to stay alive past the first turn.

The general orders for your team will be one of the following: attack an objective area, defend an objective area, search and destroy enemy in an objective area, breakout from the map at a specified area and delay the enemy from reaching the objective area. Depending on which general orders you choose, your mission can be tough or relatively easy, also depending on the enemy's strength. Your team can be American, Russian or German, and you can outfit your team with units and weapons yourself or choose a pre-set scenario in which your team has already been assembled, placed and outfitted.

As far as movement goes, you can choose standard or scouting movement. In either case, you move your unit a certain number of spaces, wait a number of periods or deploy your unit (dig-in or load up with ammunition). In combat, you can be in a defensive position, taking advantage of the terrain, or an attack position, exposing yourself to attack.

Terrain has an effect upon movement of your units, as does the number of units that occupy a certain square on the map. The terrain affects the line of sight of a particular unit and can determine whether you see the enemy or not. The enemy may spot you without you seeing him. If there are a few units of the same team on the same square, you are opening yourself up to an area attack, which will affect all units in one square. Other attack possibilities are direct and indirect fire. If you size up your locations, keep supplies coming, check your line of sight and prepare yourself for surprises, you will eventually "win" the game.

Obviously, I can't describe all of the options of the game, but be sure that *Under Fire!* is complete as far as tactical games go. You don't even have to use a tactical map. You can also use a strategical map or a situational map to review unit positions. The graphics are good for all views shown, especially the forced perspective of the buildings, hedges and walls. From grass to trees, all of the terrain elements stand out. The sounds are few in *Under Fire!* You hear explosions during combat, but that's about it. But who needs sound effects in war games, anyway?

In addition to the regular game, you can purchase a Mapmaker disk that allows you to create your own maps for use with *Under Fire!* This Mapmaker disk is a simple construction set that contains all terrain elements separated into seven groups, such as Road Parts, River Parts and Stone Buildings. There are 50 terrain pieces that you can put together to form a map and the design is as simple as selecting a piece and placing it on a blank map. In *Under Fire!*, all action is seen from above, but units are shown from a side perspective. In addition, you can save the maps you design onto disk. On an initialized disk, you can also save games in progress, but the total of maps and games must not exceed five per disk.

Getting back to the Mapmaker program, I'll start my list of criticisms of *Under Fire!* My biggest complaint is that the Mapmaker program is separate from the *Under Fire!* game. Although a coupon worth $5.00 off the price of the Mapmaker disk is included in *Under Fire!*, I believe the two programs should have been brought together in a package that was slightly more expensive than the *Under Fire!* package by itself. The original Apple version of *Under Fire!* included the Mapmaker disk. Why did Avalon Hill separate them for the Commodore 64 version?

On that note, a new rule book is necessary. The rule book, as it stands, is confusing and doesn't list the options available in every menu in a format that can easily be examined. The interface is a little awkward until you get used to it, but after that point it is easy to use. When bridges are blown up or roads blocked, there are no graphic differences from normal bridges and roads. This has to be changed. Finally, contrary to what the manual says, *Under Fire!* does not allow the player to scroll backwards through a menu of choices by moving the joystick in the opposite direction. Toggling the joystick in any direction scrolls through some menus in only one direction. This results in awkward joystick use.

Although these anomalies are present in *Under Fire!*, I still recommend it for those war gamers who are looking for a strong challenge. If you think you're really good, increase the skill level of the opponent and give it a whirl. *Under Fire!* is fun, but don't think that you'll breeze right through the game. You will be required to think out your strategy. That's what computer war games were made for, weren't they? ■

Continued from page 15

> You could describe *Super Disk Utilities* as an electronic toolbox.

they are dependable. I can't offer extended performance results, but on the average, I found the Disk Copy utility took around three minutes to copy a double-sided 1571 format disk using two drives. That speed is no snail's pace, but neither does it approach mach speed. I suspect most users will complain about the sparse user's manual if anything. In 14 half pages, it attempts to cover everything from disk copying to editing and CP/M to machine language monitors. I'm afraid most new computer owners will become frustrated and confused trying to figure out the difference between GCR, MFM and IBM formats and completely lost trying to decipher hex$ notation the first time they visit the ML Monitor.

I experienced only one problem with *Super Disk Utilities* which appeared to cause a system lock up. But I traced the problem to my CAPS LOCK key which I had inadvertently depressed—which prevented me from toggling between source and target drives. Thus when I thought I was pressing the numeric 8 key I was actually pressing the * symbol [shift eight]. Once I released the key, everything worked perfectly.

Conclusion

If you need a good 1571 disk/file copy utility; want to be able to analyze, format or view CP/M disks; need to edit a disk's tracks or sectors; want to lock or unscratch a file; or actually read or write to the drives memory chips directly, *Super Disk Utilities* is just what you've been waiting on. The value of *Super Disk Utilities* is not that any of the dozens of options are exotic, but that they are all located in one area. You could describe it as an electronic toolbox where any disk mechanic could reach for the exact tool they need to repair or tune-up any disk or disk drive. If you are a disk mechanic, you'll love *Super Disk Utilities*, but if you've never had the desire or need to pop the hood on your 1571, chances are you don't need all the tools and power of this collection.

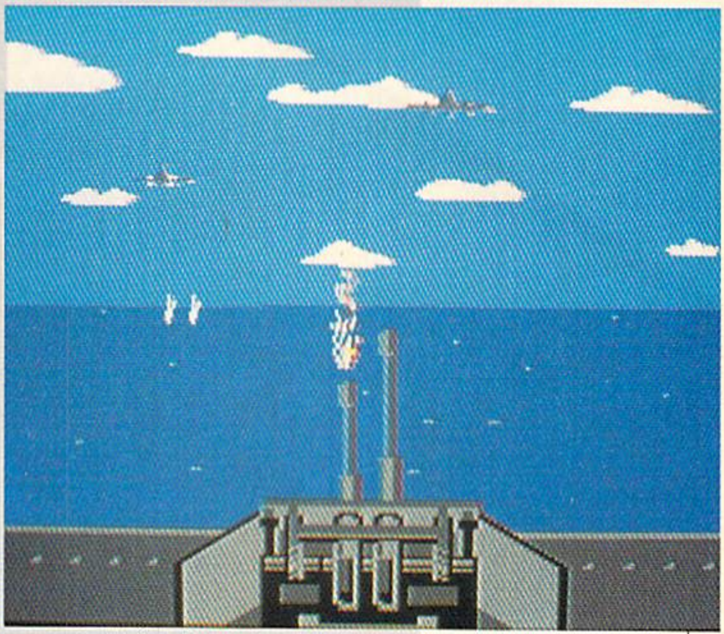
Super Disk Utilities is not copy protected. A 1571 disk drive (or two) and an 80-column monitor are required. ■

Reviewed by Jeffery Scott Hall

Power at Sea

Computer: Commodore 64
Company: Accolade
550 S. Winchester Blvd.
San Jose, CA 95128
Price: $14.95

As Captain of your ship, you will be spending most of your time issuing battle orders.



Have you ever wanted to be the Captain of your very own battleship, while both giving commands and taking part in the action occurring around you? If so, then *Power At Sea* from Accolade just might be what your looking for. In this arcade style action game, you portray the role of both commander and crew as your ship is put in the middle of non-stop action.

Before your ship can be launched into action, you must first decide what you want to take with you. Since a battleship can only carry a certain amount of weight, you must pick and choose your resources carefully. Your selections will be made from four categories: fighters, bombers, troops, and fuel. For each of the categories there is a graphic representation showing which category you're on, along with a written display at the bottom of the screen giving your current status. You can change the resources by simply moving the joystick left or right. Once you are satisfied with your selections, you may change categories by moving the joystick either up or down. The resources you will need varies with the missions.

Before game play begins, a brief message appears, giving you orders on what must be carried out to complete the mission. These orders will vary in difficulty based upon how many times you are victorious in battle. After viewing the orders you will find yourself on the bridge, overlooking your crew. Four crew members are seated on the bridge, each before a specific set of instruments. These crew members are the communications officer, navigation chief, damage control advisor, and the ships weapons expert. You may turn to face any of these four crew members by moving the joystick left or right, and pressing the fire button will cause them to give you their current status report. Now, let's take a closer look at actual battle occurring between your ship and enemy forces.

Almost all missions will consist of some sort of land battle over areas that the enemy has captured. The first thing you must do is go to the navigation screen where you will find a map showing the amount of land taken over by the enemy. To re-capture the land you must maneuver your ship close to where the enemy is positioned. This is done by setting markers around the area to which you wish to sail. You then just control the ship's speed and you will automatically be taken to the first marker that was set. Once you've either reached your destination or have encountered an enemy ship, the time compression will automatically be disengaged.

As Captain of your ship, you will be spending most of your time issuing battle orders. To give an order you must first select the weapons operations screen. Here, you will find four different commands: launch planes (allows you to fly planes into combat against enemy destroyers), man large guns (also used against enemy destroyers), man anti-aircraft guns (allows you to defend yourself against attacking planes), and assault base (used for landing troops for base take-over). Once you select one of these commands you will then be put in charge of that operation. Once you have re-captured an enemy base, an American flag will appear, and you will move on to the next battle until all enemy bases have been re-captured.

While *Power At Sea* is not a very difficult destroyer simulation, it's definitely one of the best arcade destroyer games to ever come along. The manual which comes with the game gives complete details of all ship operations, along with a command summary for quick reference. During game play, you can pause the action, abort game play and start over, and toggle sound effects on/off. The graphics, sound effects, and difficulty of missions makes *Power At Sea* an excellent action game.

Hints and Tips

Always check your messages as quickly as possible, for you will find it very useful in alerting you to enemy ships and your current status.

Whenever you've lost all your planes for an attack against enemy destroyers, use the large guns instead. Don't wait until the destroyer is on top of you to start firing — it could mean disaster.

Fighter planes are more useful than bombers for attacking enemy ships. The reason for this is that you must be in close range over the ship in order to drop a bomb, and in most cases you will be shot down before you reach it. C

Reviewed by John J. Kottler

Thunder Blade

Computer: Amiga*
Publisher: Sega of America
Distributor: Mindscape
3444 Dundee Road
Northbrook, IL 60062
Price: $49.95



Those who have played this game in the arcade will not be disappointed with the conversion Sega has done for the Amiga.

Thunder Blade is an incredibly addicting arcade action game for the Amiga. The object of the game is to eventually destroy the enemy's headquarters, however you must first successfully complete several stages of the game. Each stage has different scenery and a different perspective. However, it is this change of perspective that makes this game excitingly different from others.

The player must navigate his craft through city buildings, between pillars, and under bridges while dodging constant enemy fire as well as attempting to destroy enemy targets. Once you get used to flying from a bird's eye view perspective, you must get ready to change in the next stage to a three dimensional view. The game is extremely hectic and may be described as anything but boring.

Those who have played this game in the arcade will not be disappointed with the conversion Sega has done for the Amiga. The graphics are excellent, especially in the three dimensional perspective. Buildings, tanks, trees, bridges, everything appears to approach you from a distance very smoothly. The sound effects are very explosive and the music is extremely powerful. I really felt as though I was playing the arcade version with my Amiga connected to my stereo. The music is very stunning, the bass and drums are very realistic sounding and it adds so much to the gameplay.

In all, *Thunder Blade* is exactly like the arcade version. The graphics are detailed and the sound is professionally done. Likewise the gameplay is exactly as difficult as the arcade. However, it does take some time for this game to "grow" on the player. Since it is as difficult as the arcade version, it becomes very frustrating to many new players. It is a hectic game which may cause many newcomers to despair and give up. The controls are also very difficult to become accustomed to and comfortable with. Although they are logical controls, for this particular type of game, they can prove cumbersome.

From any view, you may move the stick forward to dive, pull the stick backward to climb, and bank left and right. Of course the fire button alone fires the machine guns as well as launches missiles. This in itself is confusing, because there appears to be no way of selecting which you would rather use. Instead, if you hold the fire button, several rounds of gunfire will be released, followed by a pair of missiles, followed by more gunfire. This is difficult when in a situation in which you could really use a missile to destroy an enemy target that is harassing your craft. Besides these joystick commands, you may also hold the fire button and move the stick forward or backward to accelerate or decelerate, respectively. Although this seems incredibly simple to remember, it is not the best combination for this arcade game.

At first I easily grew frustrated with the controls, especially when I was holding the fire button to strafe tanks and needed to pull up quickly to avoid a missile. The combination of the fire button and the backward pull on the stick caused the ship to slow down, not change altitude, and consequently be destroyed by the missile. However, I found that the speed control was more useful in the overhead view rather than the three dimensional view. In either case, I often found the helicopter doing something I did not desire because I held the fire button too long. Although the game also supported keyboard controlled throttle, I found that the button and stick combination was still in effect and often would take precedence over the keyboard controls. The game also supports the mouse as a control device.

The only other problem with the game is not the game itself, but its documentation. Unfortunately, the instruction pamphlet assumes that the player has played the arcade version. Although it does offer a few "Winning Tips" and general instruction, it is not concise. For instance, nowhere does it mention in the literature the fact that your helicopter blinks in the beginning for a few seconds in which you are "invisible" to enemy fire and the scenery in order to take off. It would be nice to know how long this "shield" lasts. Although a screen picture was displayed in the pamphlet showing where the score, high score, stage level, speed and number of hits were located, it failed to inform where the number of helicopters remaining was and what the distance bar represented. It also did not clarify what the "Hit" counter was used for. If any gauge should be added to the screen, an altitude bar would be an extremely useful feature. Because of the perspective, it is often difficult, especially from the above view, to determine your altitude.

Besides lacking a concise instruction manual this game is very well written and is extremely stimulating and addicting to play. The idea of changing perspectives keeps the player active and different scenery fuels the player's natural desire to see what is next. Even the controls are very logical and easy to use, once you have gotten thoroughly acquainted with them. If you're looking for a very fast paced arcade game with a new edge, look for *Thunder Blade*.

Flight Tips

Although some tips are hinted in the instructions, here are a few more that might keep you flying high a little longer.

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* *Also available for the Commodore 64.*

Reviewed by Steve King

Sim City

Computer: Amiga*
Publisher: Maxis Software
Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 492-3200
Price: $44.95

At the click of the mouse button, you can unleash an unpredictable tornado, cause flooding, an earthquake and random fires.



Commodore 64 version

Every once in awhile a unique program comes along that is so ingenious that it makes you glad you have a computer. *Sim City* is such program. Referred to by Maxis as a "city simulator," the program places you in the role of both a city planner and a mayor. Your goal is to grow your city in an orderly fashion through a series of zoning and taxing decisions. If the Sims (the simulated citizens) like what you are doing, your city will thrive. If not, they will show their displeasure by complaining and eventually moving out, leaving your city one large slum.

At the start, you have three choices: start a new city from scratch, load in one of eight cities provided on the disk, or load in a scenario (one of the eight cities with a pre-existing urban problem). If you select the first option, the computer will quickly generate the terrain (land and water). If you don't like what you see, simply start again. (By the time you read this, a Terrain Generator module will be available allowing you to create the precise geography you want.) The latter choices provide you with the opportunity of controlling cities such as San Francisco, Rio de Janeiro or Tokyo. In the scenario mode, the cities will soon experience some disaster such as an earthquake in San Francisco, a flood in Rio, and yes, Godzilla in Tokyo.

There are four windows in Sim City: Maps and Graphs, Editor, Evaluation and Budget. The first shows an overall map of the entire city area on the left half of the screen and a graph on the right half. The graph provides historical data on population (residential, commercial and industrial) as well as crime and pollution. There are twelve icons below the map—each representing a different demographic aspect of the city. If, for example, you click on the icon for "traffic," the highways will be depicted in different colors, each representing a specific amount of congestion. There are icons for population, crime, pollution, police and fire coverage, and growth rate. This map is an invaluable tool as it allows you to pinpoint the city's problems and plan proper growth. Superimposed on the map is a rectangle approximately one-third the size of the map which you can move around with the mouse pointer. This represents the area you can view in detail in the Editor window.

The Editor window is the heart of the program. Here you see your city in extraordinary graphic detail. You can scroll the window around the entire city by placing your mouse pointer on the edge of the screen. To the right of the screen are two rows of eight icons, each of which is a tool representing roads, railways, residential, commercial and industrial zones, police and fire departments, seaports and airports. Use these tools like you would in a paint program. Click on the icon you want and "paint" it on the terrain in the Editor Window. When you start, you first select the residential icon and click some down on the terrain.

Before any construction can occur, however, you must give the Sims electricity. Click on the Power Plant icon (you have a choice of coal or nuclear) and set one down. If it doesn't adjoin a zoned area, you must string electric lines. Soon power will be supplied, and if you watch closely you will see little houses appearing on the terrain. Add roads, factories and commercial areas, and you will see them develop. Roads across water become bridges which frequently open and close. Before you know it, traffic appears on your highways, factories spew smoke from their stacks and skyscrapers rise. In fact, the zones have up to sixteen different configurations, depending upon the density and the land value. Watch closely and you will see the houses transform into apartment houses which may eventually become high-rise luxury condos, complete with swimming pools. There are even sixteen different types of little houses, as well as churches and hospitals.

As the game progress and you add a seaport, a ship will ply your waterways. Trains travel down the track you laid, and airplanes take off from the airport. You even have a traffic helicopter which circles the city to advise you of congestion. If you add a stadium, you will periodically notice sporting events taking place. Constantly checking your overall map will provide you with the needed information to plan future growth and activities.

At the end of every year (which takes from several up to ten minutes, depending on the speed you set), you are presented with budget alternatives. If you have the funds (which are raised through taxes), you can meet the needs of your departments. If not, you must cut back and risk the consequences. You have the option of raising or lowering the tax rate at any time, but beware of the consequences if you raise them to a level that the Sims don't like! There is a way to cheat and get more money, but I won't squeal.

The Evaluation Window gives you your

Continued on page 26

* *Also available for the Commodore 64.*

Reviewed by Steve King

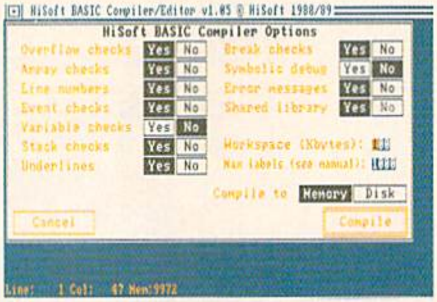
HiSoft BASIC Professional

Computer: Amiga
Publisher: Michtron
576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700
Price: $159.95

Whoever said that BASIC was slow was wrong—at least if the reference was to *HiSoft BASIC*. *HiSoft* is fast because it is a compiled BASIC rather than an interpreted one like AmigaBASIC. The traditional type of BASIC program is indeed slow because each time the computer reaches a new program line, it must translate the statement into machine language which the computer understands and can execute. In compiled BASIC, on the other hand, the compiler translates the entire program into machine language before executing and saves it to disk. When you run the program, no on-the-fly interpretation is necessary.

HiSoft BASIC is not really a stand-alone language as it compiles ordinary text files (which can be written with a word processor) which contain commands identical to both AmigaBASIC and most other BASIC languages. For this very reason, BASIC programs written for other computers can (with some modification) be ported to the Amiga. Most important, programs written in AmigaBASIC can be compiled and run without change.

HiSoft BASIC Professional is comprised of two program modules—the Editor and the Compiler. Although you can write your program on any word processor, the Editor has some distinct advantages. The most important advantage is the ability to compile and run your program automatically merely by selecting the Run option from the menu strip. When this option is selected, the Compiler takes over and translates your text into machine language, storing the new version either in memory or on disk. After compilation, the program is automatically executed. If during compilation the program encounters an error, it will stop and advise you of the problem. If you elect to continue, the compiler will remember all the errors, and the program will jump back to the Editor and list the errors one by one, including a short description of the problem.



The Editor itself is similar to a simple word processor and makes use of the keyboard as well as the mouse for cursor positioning. It provides a search and replace option as well as block cutting, copying and pasting. If you have at least one meg of memory, the Editor provides additional features such as the automatic capitalization of command words.

The compiler has numerous control options which can be enabled either by clicking buttons on the Compiler control panel, or by inserting "metacommands" directly in the program. These commands (which are preceded with a REM and $) will not be executed as part of your program, but will be picked up during compilation and acted on by the compiler. Some of these options are quite powerful and flexible and tend to increase the speed of execution even further.

For example, you can turn event checking (for mouse clicks and menu choices) off at will. This increases the speed of execution, as the computer will not constantly check for those events. The statement "REM $INCLUDE" will automatically insert a separate program in your main program. This allows you to import numerous subroutines at compile time and keeps the actual text program to a minimum. There is a significant number of optional routines that check for errors (such as mis-dimensioned array and overflows). All of these can be disabled to produce a faster but perhaps less reliable program.

The one disadvantage to any compiled program is that it needs its own library of specialized routines for support. *HiSoft BASIC* is no exception and that code, known as the "hisoft.library", must reside in the libs drawer of your Workbench disk. As an alternative, however, and if you have at least one meg of memory, you can specify that those portions of the library that are necessary for your program be incorporated into your program. While this option increases the length of your program, the compiler will produce a true "stand alone" program module, and you won't have to worry about the hisoft.library being present when the program is run by a user. Another disadvantage is that debugging is more difficult than in AmigaBASIC because you can't interactively display the values of your variables.

With respect to performance, the disk comes with a number of traditional AmigaBASIC demos which have already been compiled, and the difference is obvious. The speed of calculations, text output and graphics are all increased dramatically. For example, a simple FOR . . . NEXT loop counting to 200,000 took AmigaBASIC 71 seconds to complete while *HiSoft* did it in eleven seconds. AmigaBASIC also took twice as long to print a series of lines of text to the screen. *HiSoft BASIC Professional* also includes a number of commands which AmigaBASIC does not support. The most important of these are BSAVE and BLOAD (for direct loading of binary files), and the DO . . . LOOP logic construct. *HiSoft BASIC* supports 32-bit numbers and gives you the ability to open a larger variety of windows (such as borderless and backdrop). From my use of the program, it appears to support Amiga library and external machine-language routines.

The 358-page manual is thorough, and most of it is devoted to a page-by-page description of the commands and their use. An extensive section describes all of the errors you are likely to encounter in compiling and running your program, and there are several technical sections which describe the operation and memory usage of the compiler. The program comes on two diskettes which are not copy protected.

The primary shortfall of the program, however, is that to make it completely compatible with AmigaBASIC, the nasty bugs of AmigaBASIC had to be retained. Most noticeable are the flickering objects. This is a shame, as one of the most promising uses of a compiler is to produce fast, smooth animation using the BASIC language. If that is your goal, *HiSoft BASIC* won't fill the bill. One thing, though, is certain. Once you compile your BASIC program with *HiSoft BASIC Professional*, few will ever realize that it was written in BASIC.

Reviewed by Jay Kee

JUG

Computer: Amiga
Publisher: Microdeal, Ltd.
576 S. Telegraph
Pontiac, MI 48053
(313) 334-8729
Price: $39.95

The name of the game is *JUG*.

It's pure arcade action wrapped up in a science fiction package with one of the oldest plot lines in the book: The world is about to be destroyed. You—and you alone—can save it from destruction.

Where have we heard that one before?

But wait, there's a twist. This isn't your average garden-variety world. *This* planet is alive! And you're not saving it from nuclear devastation or an invasion of hyperdimensional space pirates or anything quite so predictable. You're saving it from a cold!

It would appear that this planet has managed to pick up the grandaddy of planet-sized flu bugs, a killer virus that is causing its brain to short-circuit and is slowly destroying its vital functions (sounds like something I had last winter). It's up to *you*—an interactive humanoid composed of Titanium fleximetal and other organic materials, nicknamed JUG—to find this bug and kill it before it kills your planet. A fairly reasonable proposition.

There is, of course, one small problem. It seems that the planet's immune system takes a rather dim view of you zipping around in its vital organs. So while you're busy playing the hero and trying to save the planet, the planet is busy trying to kill you.

Don't get the wrong idea. This isn't high drama. Dress it up any way you want, this is still an arcade game. But what an arcade game! It's nearly impossible to describe the visual feel of this game. The graphics have an almost surreal quality to them; backgrounds are all wildly different and never repeated, and the creatures cover the full range of the science fiction spectrum, from the merely bizarre to the totally incredible.

The animation and scrolling effects are smooth as silk, and the pace of the game is frantic. You barely have time to breathe, let alone think or react. Even the sound is awesome, with digitized music providing a strong rock 'n roll counterpoint to dazzling sound effects. It's an audio-visual experience of raw, almost primal energy. Nothing cerebral here at all.

It's an audio-visual experience of raw, almost primal energy. Nothing cerebral here at all.



Game-play is classic arcade shoot-'em-up. Your joystick controls the JUG which comes with a high-speed, low-energy laser cannon as standard equipment. Other, more exotic weapons, such as the Plasma Fire and Smart Bomb, have to be collected on the run. Of course, the JUG has a limited fuel supply. And it gets *lousy* mileage. Which means keeping one eye on the fuel gauge and the other peeled for the elusive Fuel Cells. If you *do* run out of gas, your only other option is to remain stationary long enough for the JUG to regenerate its fuel supply. Unfortunately, sitting still in this game is like going over Niagra Falls in a shoe box: you have a very slim chance of survival, and it is not highly recommended.

Strategically, it's pretty basic. The interior of the planet is divided into four zones, consisting of four sectors each. To win the game, all you have to do is collect the keys that unlock each sector and then figure out how to get from one zone into the next, with the ultimate objective of getting to the fourth level and destroying the killer virus.

No problem.

As long as you have the reflexes of a hyperactive cat, nerves of steel and the patience of a saint.

But no game's perfect and there are a few minor things that bug me about this one. First, the manual. Some games have warranty cards with more information. There are no listings of creatures and their respective strengths, weaknesses and score values; no explanation of the teleport gates and how they work and no hints on game play. This game is tough enough as it is without forcing you to guess your way through the basics.

Secondly, there is no way to save your position, an oversight that is almost unforgivable and one that is all too common in games of this type. When are these companies going to realize that it's no *fun* screwing up 28 million times and being forced to start from square one every time?

And finally, no brakes! This games starts fast and just gets faster with no way of slowing it down. It would be nice to have a practice level that would give players the opportunity to get a feel for the game without getting blown right out of their chairs.

To summarize, *JUG* is a beautiful piece of work, totally unpredictable and extremely tough to beat. It is an exercise in purely physical self-indulgence with no redeeming intellectual or educational qualities whatsoever.

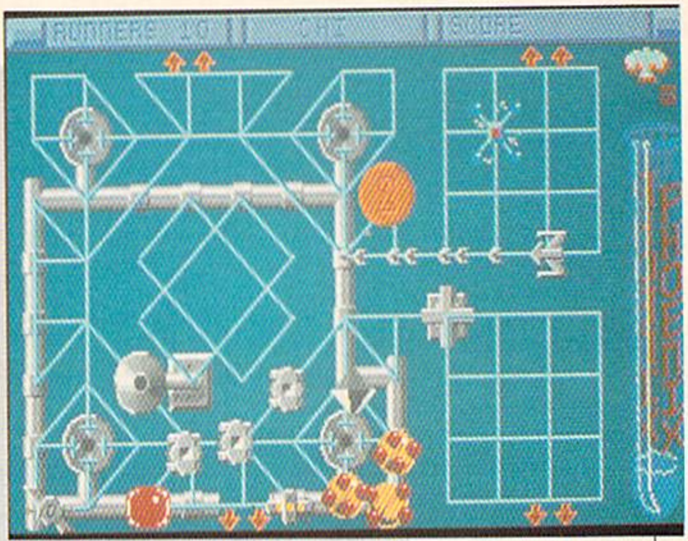
In other words, the ideal arcade game.

Reviewed by Gary V. Fields

Tetra Quest

Computer: Amiga
Publisher: Microdeal, Ltd.
576 S. Telegraph
Pontiac, MI 48053
(313) 334-8729
Price: $39.95

The enemy forces are formidable but not invincible, the grid structure is puzzling but not unsolvable, the quest is difficult but not insurmountable.



The cover of *Tetra Quest* displays a fast looking flying craft which might give the impression the game inside is some sort of flight/combat simulator—it is not. The flip side of the package offers some promotional hype which led me to think the game was some futuristic sports simulator—wrong again. And to add even more confusion to what *Tetra Quest* is, the screen shots on the box appear to show some sort of electronic construction set—yet there is nothing to build here. This is one game which holds true to the old adage—don't judge a book by its cover.

As is true of most arcade games, there is some sort of marketing department-created theme to justify the existence of the game. Most go along the line of the old cliche that you, single-handedly, must save the universe and the promoters of *Tetra Quest* didn't break with that tradition. According to the game's storyline a bunch of universal super jocks had gathered to compete in the ultimate Olympic games. But before they could kick off the first heat, it was announced that the Tetroids (the super bad guys) had stolen some special tablets, without which the games could not be held. Phoebus (who is both the promoter of the games and the sun god) challenges each athlete to become Tetraquestrians (by finding and returning the tablets).

It is at this point that the actual game begins. You are strapped in a combative looking craft (the one depicted on the cover) and deposited in sector one to begin searching. Your movement at this point is restricted to a grid defined by metal tracks (the screen images which gave me the impression *Tetra Quest* involved construction) which lead from one sector to another. Scattered around the tracks are numbered medallions which you must collect in the correct sequence. When all the coins in a sector are collected, you are advanced to the next, more difficult sector.

Tetra Quest's quality graphics, effective sounds, true arcade speed and challenge make the game worthy of play on its own merit. The programmers mixed the elements which make a good arcade—the enemy forces are formidable but not invincible; the grid structure is puzzling but not unsolvable; the quest is difficult but not insurmountable. I advise you to ignore the packaging hype and just enjoy the pleasure and challenge of a good arcade.

Locating and picking up the gold coins is a complicated task. Competitive twists in the game include attacking aliens which you must either blast or avoid, levers that you must turn to give you access to blocked sections of the grid, and transporter tubes you must use to get to and from areas of unconnected tracks. According to the manual, the game has a total of 96 progressively difficult and different levels. Each level consists of four screens of play, four coins and a puzzle to solve.

The puzzle is discovering the route which will get you to the coins in the correct sequence. Getting to the next coin is more difficult than just seeing it and maneuvering next to it, because the track grid in your current screen may not connect directly to the track on which the coin is held. In some instances you can switch a lever and get access to the coin, but at other times you may have to descend into a tube which connects to the track near the coin. And to make things even more difficult, the levers and tubes you need to access a coin are often located in one of the other three screens making up a sector. If you accumulate enough power you can transform your fighter craft into a flying Phoenix—freeing you from the restrictions of the grid design. But to survive very long you will have to master pinpoint landing and transformation procedures. Add invading aliens, and the pressure of knowing when to trade points (accumulated by blasting aliens) for fuel or more lives to the puzzling challenge of maneuvering the gridways and you have a game which will stump and entertain you for a long time.

Tetra Quest has one nice feature I wish more arcades had—level saving. After completing every fourth level of play the game generates a four-letter password which is saved to the disk when your last life is lost. This allows you to continue exploration of *Tetra Quest* from your last completed level the next time you play. I really like this sensible, workable solution to the dilemma of exploring deeper into a game without having to start over from level one.

I was initially disappointed with *Tetra Quest* because from the packaging and promotional text I expected it to be a flight or sports simulation and it turned out to be something entirely different. But once I accepted it for what it is—a good arcade game—I found it exceptionally pleasing to play. If you enjoy a good arcade game with some nice twists and plenty of challenge, you'll enjoy *Tetra Quest* too—it's good arcade.

Reviewed by Graham Kinsey

Telewar

Computer: Amiga
Company: Software Terminal
3014 Alta Mere Dr.
Highway 183 South
Fort Worth, TX 76116
Price: $39.95

TeleWar simply requires that your modem be Hayes-compatible, which the vast majority of modems are at this time.



Playing a strategy wargame can be rather difficult if you don't have a friend to play against. What can a computer do to help alleviate this situation? Well, although is isn't very practical to try to play a board game with someone over the phone, two computers can use the phone lines in an efficient way to facilitate playing a wargame. Software Terminal's strategy wargame *TeleWar* is primarily designed so that two Amiga owners can play a wargame over the phone via modems.

In *TeleWar*, the ultimate goal is to destroy the enemy's headquarters with your army of tanks and artillery units while preventing your opponent from beating you to the punch. There are three different terrain scenarios to choose from in *TeleWar*, as well as four different army configurations.

When you load *TeleWar* you will be presented with the play screen. The top of the screen is devoted to the players view of the battlefield. Approximately 1/6th of the entire battlefield is displayed at any one time. The bottom half of the screen contains all of the tactical information plus all the control gadgets that are used by the players for their input during the game. If you press the right mouse button you may be surprised that *Telewar*'s menu set appears from the middle of the screen instead of at the top. Here is where you select the terrain scenario and army configuration.

The three terrain scenarios greatly alter the strategy needed for each game. The Forest scenario features three "choke points" — the only points where units can cross a river into enemy territory. The Swamp scenario has many off-limit areas which makes organizing your army much harder than in the other two scenarios. The Desert scenario offers absolutely no restrictions on movement. With this scenario the only things that really inhibit instant movement to any point on the map are limited fuel supplies and of course the location of enemy units.

TeleWar has five main army units: Heavy and Light Tanks, Heavy and Light Artillery, and Supply Trucks. Each of the four offensive units has is strengths and weaknesses. The Supply Trucks are used solely to supply fuel and ammo to the other four units. There is air support, which not only serves as reconnaissance, but can also be used as a secondary form of attack. The only other objects in the game are the Transmitter towers, which dispatch air support (if your Transmitter is destroyed by enemy fire you lose the option of calling air support for the rest of the game), and the Headquarters. The Headquarters has a strong defensive value but no offensive capabilities, making it the tactical equivalent of the king in a game of chess.

You can also select three other options which have been added in the new version of TeleWar (version 1.5.) The first option is the time limit. You can determine how much time each person has to give orders to his units. When that time has elapsed the player will be forced to end his turn, even if he is not finished giving orders. The second option determines whether objects like trees and bridges should be obstacles to the unit's fire. The last option determines whether units can fire after they have moved to a new location (in addition to firing before they move) in the same turn.

All telecommunications options are selected from the menu set. Not only can you simply call another computer running *TeleWar*, you can also can save phone numbers of your opponents in a special directory that allows you to quickly recall any number you have previously saved, making dialing someone up more convenient. There is also a directory where you can save modem parameters that relate to your end, including the baud rate. *TeleWar* simply requires that your modem be Hayes- compatible, which the vast majority of modems are at this time. *TeleWar* will operate at 300, 1200, 2400 even 9600 baud (this last rate is mostly useful for null-modem connections, although 9600 baud modems are slowly starting to make inroads into the Amiga user base.)

Back to the game. The central portion of the tactical display contains a condensed strategic grid (which has coordinate dimensions of 32X20) of the entire battlefield. All friendly units are displayed as colored squares, and each enemy unit that has been detected will also be displayed as a different colored square. The strategic grid can be used to quickly access any friendly unit by just clicking on the unit's location on the strategic grid. The strategic grid also shows the predominant terrain features of the battlefield, although none of the many trees in the Forest terrain scenario will be displayed on the strategic grid.

The left portion of the tactical display shows all the statistics of the friendly unit that is currently selected. Besides the type of unit and the unit's current location, also displayed are the unit's attack gun range, gun power and mobility, as well as defense points, fuel and ammo remaining.

The right side of the tactical display contains all the gadgets used to control your units. The primary command box contains two arrow gadgets that are used to scroll through your units in order to see if you want to give them orders to move or fire. This method of selecting your pieces is much more efficient than using the mouse and the strategic grid to select each unit. Early in the game, this is your only hope for giving orders to all of your units

before the allotted time for your turn runs out. Between the arrow gadgets is where the remaining time left in your turn is displayed.

Below the arrow gadgets are gadgets to tell a piece to move or to fire, and these same gadgets will tell you if a piece has already moved and/or fired this turn. Below this box is the directional gadget box, which is used to direct both movement and fire for all units. The supply gadget box has three gadgets that tell supply trucks to resupply adjacent units with fuel or ammo.

Finally, the air support box in used to call air strikes. You can only tell the airplane to fly over the top third, middle or bottom third of the battlefield. You can only call in air support if you have given orders to less than five units during this turn.

The graphics and sounds in *TeleWar* are not dazzling. However they are as good as you would expect on an Amiga, and that is sufficient in itself. *TeleWar* does indeed allow multitasking, allowing you to carry on other projects while your opponent is conducting his turn.

TeleWar is copy-protected. Fortunately the copy-protection consists solely of the type-in-the-word-from-the-manual form, which is relatively painless. One thing I do not like about that form of copy-protection in this case is that the manual is hard to read. The manual's has orange pages with light blue ink used for the text. Despite the color contrast between orange and blue, the manual is still not very legible. *TeleWar* only crashed on me twice, and considering how much I play-tested the game that isn't really awful. There is an annoying aspect in that many times a requester would come up after a turn had ended, and you would be forced to click in this requester to unobstruct your view.

Finally, it's time to stress that *TeleWar* does not have one player (i.e. human against computer) mode. Therefore, if for some reason you do not have anybody to play against, this game will end up on your shelf collecting dust. To help alleviate this problem, Software Terminal has set up a BBS where *TeleWar* owners can meet potential opponents. Of course unless you live in Texas (Software Terminal is located in Fort Worth) or use PC-Pursuit this BBS may not be of much help to you. However, assuming you do have an opponent to play against, *TeleWar* is quite challenging, and for those strategy wargamers who own a modem, worth taking a look at. ■

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There are advantages to both the overhead view as well as the three dimensional view. However, when you are in the over-head perspective try to stay high when possible. Although Sega recommends that you dive upon tanks, you may also be able to destroy them from higher altitudes. Being higher up allows more time to avoid missiles which streak up towards you. The higher up you are, the longer they take to reach your altitude.

Also, in order to determine an enemy missile's altitude, examine the diameter of the missile carefully, which is represented by a fireball. Attempt to remember the size of it at its peak—your helicopter can easily fly over and past missiles that are beneath you, however it is often difficult to determine which are under you and the natural inclination is to simply avoid them all. When you see a missile streaking upward in front of you, drop your speed drastically, this will cause the missile to miss you by appearing to go straight up in front of you. In addition, when you are attacking the ship and the controls change so that forward and backward movements control your speed and distance on the screen, attempt to fly towards the top of the screen. Since you are always traveling at a constant speed during this stage, the extra space behind your helicopter will allow sufficient room to retreat from enemy fire.

From the three dimensional perspective, do not slow down or stop. The back of your helicopter is drawn in the middle of the screen and if you remain stationary, it is easy to miss a missile that may be in front of your helicopter and covered by it on the screen. Constantly moving about will offer a better screen examination. From this back view you may also effectively dodge missiles by diving underneath them.

Remember at all times to fight defensively — slowing down and swerving to avoid missiles. Slaloming left and right on the screen through a stage may also prove beneficial, luring missiles to one side while you destroy a target on the opposite side. You are also granted some time in the beginning and each time you crash in which your helicopter blinks and is "shielded" from enemy fire. Take advantage of this time to position yourself and also destroy as much as possible while you are invincible. Finally, always remember to watch your rotor blades, if you go down and there was no missile in sight, chances are you cut it too close! ■

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rating and lets you know what the people feel are the biggest problems. You'd better listen to them. After all, you only serve at the will and whim of the Sims. This window also gives you overall statistics on your city, including its population and net growth. At the bottom, your current score (a rating from 0 to 1000) is displayed.

To add spice to the program, there is a special menu for disasters. At the click of the mouse button, you can unleash an unpredictable tornado, cause flooding, an earthquake or random fires. You can set a monster loose or cause an air disaster. And once in a great while, the program will cause a nuclear meltdown if you have a nuclear power plant.

The graphic detail is outstanding, particularly considering that *Sim City* is one of the few programs that uses the Extra-Halfbrite mode (64 colors). The program also uses digitized sounds including the garbled babble of a helicopter traffic reporter. While the animation is relatively primitive (trains, planes and ships), it is not at all essential to the play of the simulation and thus doesn't detract from the play. The manual, about 50 pages long, covers the workings of *Sim City* quite well and includes a fascinating article on the history of city planning and cities.

Sim City is an extremely clever and fascinating program. As you develop your city, you also develop a certain attachment to and possessiveness about it. You may even find yourself spending a good deal of time at work or at school thinking about what you will do next or wondering why the city is not moving in the direction you intended. *Sim City* is a program that can be enjoyed and appreciated at all levels. Graduate schools in city planning are using the program for educational purposes. Children love it—particularly when they find out that every single disaster can be unleashed at once, wreaking havoc and causing widespread fires and explosions. My eight-year-old son even built a city with three residential zones and fifty power plants!

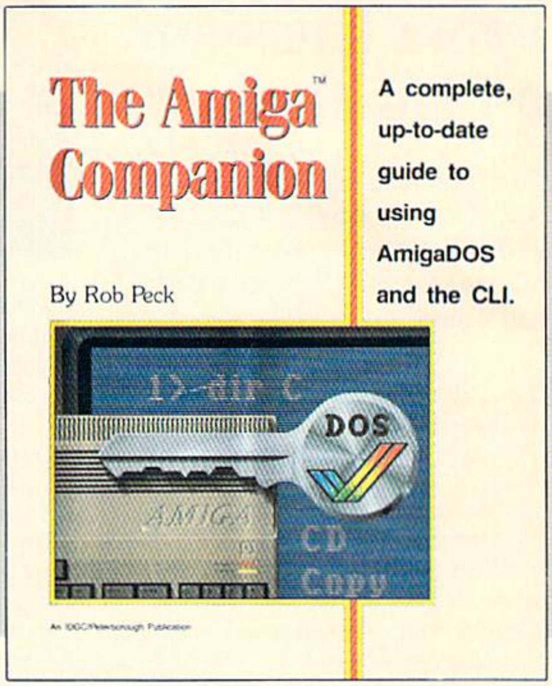
Sim City is actually based on the science fiction short story "Seventh Sally" by Czechoslovakian author Stanislas Lem. It took over three years to develop, and now it certainly belongs in everyone's software library. And although Pittsburgh may have been rated the best city in America, I would have to cast my vote for *Sim City*—particularly the one I spent the last week developing. ■

Reviewed by Dan Schein

The Amiga Companion

Author: Rob Peck
Publisher: IDG Communications/ Peterborough
80 Elm Street
Peterborough, NH 03458
Price: $19.95

This book is not so much the result of the author's experience as it is the result of his taking the time to ask and listen to Amiga users.



The *Amiga Companion* is one of those books that Commodore should have written and included with every Amiga. It contains the answers to those questions that every Amiga user has at one time or another. In addition it answers them in a style that is easy to read and maybe more important, easy to understand.

This book is not so much the result of the author's experience (although it does show), as it is the result of his taking the time to ask and listen to Amiga users. In preparing to write this book Rob Peck spent a lot of time on the various commercial networks and BBS's talking and listening to users. This book is the result of their feedback and comments, you might say the subjects in this book were decided by you the Amiga user.

When the Amiga 1000 was first released Commodore did not include any kind of information on things like the CLI, ED, and error codes (among others). Why this was done is still a mystery to me (maybe CBM thought that only developers would use them). Whatever the reason was, Commodore quickly found out that the average Amiga user was not at all average—they wanted to know more and wanted to do more with this machine than any other before it. Since that time two new Amigas have been introduced, the A500 and A2000. These new machines come with much improved manuals that now cover many of the items Commodore didn't mention in the earlier manuals. Although improved, there are still many areas that need additional in-depth coverage. Those areas are the subject of this book.

But enough talk, lets take a quick look through the book...

Chapters 1 through 10 cover the CLI (Command Line Interface) from its use, the commands available to be accessed with it, all the way up to editing for that personal feel. With only 12 chapters in the book you can start to understand the importance of the CLI.

The first chapter explains how to open a CLI, its prompt string, what a CLI command is, how to stop and start output, how to view the contents and directories of a disk, and moving from directory to directory. Chapter 2 covers command templates (or syntax), command redirection and the Amiga style of pattern matching. These chapters are a MUST read for anyone who finds the CLI to be confusing or has yet to start using it.

Chapter 3 is devoted entirely to the AmigaDOS V1.2 Workbench disk and its contents. Each directory is explored with details on what each file inside is used for. An insight is given to the purpose and duties of each directory for a better understanding of your workbench.

Chapters 4 through 6 cover the information commands, modifying files, and the system utility commands. The information commands show information about AmigaDOS and the files on your disk. While these commands may at first glance seem odd or not important, they are in reality very important if you want to get the most from your Amiga and its disks. Some of the items covered in this chapter include devices, assigns, status, and the Info command. Information on things such as naming and renaming files and disks, making directories, joining files, deleting files and directories, to setting protection bits are covered in Chapter 5. *The Heart of the CLI* (as its called in the book) or Chapter 6 contains such items as disk copying and formatting, file printing, running a script file, text editors, and disk doctoring.

Configuring AmigaDOS is the subject of Chapter 7 covering such things as setting the system date, search path, CLI prompt, Addbuffers for faster disk access, changing the priority of running tasks, and setting the stack. These are some more of those areas where new Amiga users can easily become confused but are so important to understand.

With the Amiga you don't have to be a programmer to write programs. These programs are known as command scripts (or a script file). Chapter 8 covers the Amiga's command scripts from the commands available for use, to using substitution stings. This is explained through a series of examples that are easy to follow and understand. I must admit that even after years of Amiga experience I learned a few new tricks in this chapter.

One of the fun things you can do with the Amiga (and this adds to the personal feel of each machine) is customize the CLI's screen. Chapter 9 explains how to clear the screen, change the color, reverse, do bold, italics, and more with the characters of your CLI. This chapter is a lot of fun but is also practical.

The new AmigaDOS release 1.3 is covered in Chapter 10. The new commands and devices are covered as well as the 1.3

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by Russ Ceccola

From Russia to a Fish Tank

Our venerable software reviewer Russ Ceccola takes a brief look at some of the new entertainment releases for the Commodore 64 and Amiga

Before writing this column, I attended the Consumer Electronics Show in Chicago for the first time. Boy, was I impressed! I saw a lot of new software scheduled to come out in the next few months and most of it is hot. The majority of the new titles that I saw were games, but many other home productivity and art programs were shown as well. Before I get into the games this month, I thought I'd mention my favorites from the show. So, here goes!

Accolade was showing seven new titles: most impressive to me were *Hardball II, The Cycles,* a haunted house game and an intrigue/espionage game. Electronic Arts had *Indiana Jones and the Last Crusade* and *Loom* (a new adventure from Brian Moriarty) from Lucasfilm, *Might & Magic II* from New World Computing, *Curse of the Azure Bonds* from SSI and some new Amiga products that I didn't get to see but was told by those who did that they were pretty cool. By now, *The Magic Candle* should be well on its way to success. Mindscape had *Gauntlet II, Star Trek V* and my personal favorite, *Fiendish Freddy's Big Top O' Fun*. Epyx was showing *California Games II* and my show favorite that I wandered back to again and again — the sequel to *Defender.*

Mediagenic had a bunch of neat stuff — *Scooby Doo,* the *Flintstones, Johnny Quest* and the *Jetsons* from Microillusions, *Dragon Wars* from Interplay, *Secret Agent* from Dynamix and *Ghostbusters II* — destined to be one of my favorites of the year. California Dreams was showing *Hot Rod* and *Titan* from Titus Software blew me away. I've been playing the game for hours on end since I've got it and only reached level 34 out of 80. Taito had a number of new games, with *Rambo III* and *Arkanoid II* as my picks of the show from them. Data East was previewing their new sports line, with Scott Orr presiding. Thanks for the demo and the drinks! Virgin Mastertronic had *War in*



Middle Earth up and running and Broderbund offered *Licence to Kill.* Also, Origin had four new products — the best of which were *Knights of Legend* and *Windwalker.*

Ultimately, the most impressive booth at the show was the E.S.P./FASA booth. What was being shown was the BattleTech Center — the answer to Lazer Tag centers. BattleTech Centers will allow up to eight players to compete in the same game. They can form teams or go it alone. What makes the game unique is that it is played inside a state- of-the-art simulator not unlike a futuristic tank cockpit. The first BattleTech Center will be built in Chicago next year and there are plans to build them all over the world. Players will pilot vehicles from the Battletech universe and fight against other players in connected simulators. I played a few games whenever I could get close enough — enough to see that these centers are going to be the next big fad.

Well, that's enough on the Summer Consumer Electronics Show. My pick of the month as far as games go is *Tetris.* Ever since I picked up a copy at the show, I've been playing the game every spare minute. Spectrum Holobyte did a great job on the game. One thing that I was asked to mention about *Falcon,* Spectrum Holobyte's great flight/combat simulator is that mission disks are on the way. So for all you players who have gotten bored with the current scenery, more is coming. Just be patient! As always, if you have any questions direct them to me in care of *Commodore Magazine.* See ya!

Tetris ★★★★½
Spectrum Holobyte
2061 Challenger Drive
Alameda, CA 94501
Amiga: $34.95

Quite simply, *Tetris* is the most addictive game to come along since Arkanoid. It is a simple game from Russian designers, but takes a lot of time to master. In *Tetris,* one of seven shapes made up of four squares falls from the top of the screen. You can rotate these shapes to fall the way you'd like. The ultimate goal is to form solid lines across the bottom of the screen. When you form a line, it disappears and the rest of the blocks on the screen all drop a level. By continually forming lines, you prevent the game from ending. As soon as the rows reach the top of the screen, the game ends.

The key to playing *Tetris* is to look ahead to the next piece and plan out where you want the piece to go. If you don't leave holes in the rows, you will be able to form solid lines more quickly. By dropping pieces quickly, you increase your score. The simplicity of the game is what makes it so addictive. Everything else has been said about it, so I'll just make it simple. *Tetris* rules! The only reason that I didn't give *Tetris* five stars is that when you hit the down arrow, the piece instantly drops instead of speeding up in its downward motion like the arcade game. If this change was made, *Tetris* would unhesitatingly get my highest praise.

Axe of Rage ★★★
Epyx
600 Galveston Drive
San Mateo, CA 94063
Commodore 64: $34.95/Amiga: $49.95

Axe of Rage is one of those games where I'm initially unsure about it, but grow to like it more and more later on. I must admit that at first I thought the game was a little difficult to figure out, but I learned it quickly later. *Axe of Rage* puts you in the typical Conan-type role as an adventurer (either male or female) out to get rid of the evil Drax. You must journey through four levels before you get to see Drax's inner sanctum. At first, you'll wander aimlessly before you figure out how the terrain is connected.

Axe of Rage is set in the dungeons and caverns of a hero's world. You will battle many monsters and hop over lava rivers, puddles of blood and other icky things that drip from the walls. You really have to time your axe blows to do the most damage on the monsters. Along the way, you'll find a few objects that can help you out — like magic potions, keys and the necessary Globe, Shield, Jewel and Sacred Axe. Although I never got through the second level, there is certainly a lot more fun to come in the game. I haven't even reached any dungeons! Fortunately, for all you new adventurers out there, Epyx included partial maps of the first two levels

in the manual and an *Axe of Rage* tattoo for you tough guys and gals.

Blood Money ★★★★
Psygnosis c/o Computer Software Service
2150 Executive Drive
Addison, IL 60101
Amiga: $39.95

Psygnosis is well-know for making excellent arcade games. *Blood Money* is no exception. In fact, it may well be their best. Coming in a package with beautiful artwork, *Blood Money* will have your joystick finger itchy for hours on end. In the game, you choose to command one of four vehicles: helicopter, submarine, rocket ship or rocket pack. Depending on the vehicle you choose, you get different terrain. Each type of terrain has its own monsters and enemy vessels for you to shoot at. From giant eels to circular ships, *Blood Money* throws all kinds of things at you in vivid colors and expects you to destroy them all.

What separates *Blood Money* from all the other shoot-'em-ups and gives the game its title are the coins that are left behind by dead enemies. Every target that you blow away leaves a coin of a different value — from 1 to 50. By saving up coins, you can add more firepower to your vehicle. You can add such things as neuron bombs and rear-fire missiles. By adding this element to the game, strategy comes into play. Together, the action and strategy make *Blood Money* a superb game. The graphics and sounds are some of the best I've seen and heard. You also get a poster of the game box artwork too. The only complaint that I have is that the game is a little tough for the first 10 or 20 games until you get used to it.

CHOMP! ★★★½
Cosmi
415 N. Figueroa
Wilmington, CA 90744
Commodore 64: $24.95

CHOMP! definitely gets the award for strangest game of the month. Although it has such a wacky idea, the game really works! You take the part of a little goldfish just minding your own business in the pet store. Unfortunately, everybody is after you. If it's not the cat who reaches his paw into your bowl, it's the piranhas chasing you around the fish tank. Sometimes, even a shark comes after you! *CHOMP!* requires you to guide a little goldfish around a tank or bowl in order to eat the brine shrimp and other food in the water. At the same time as you do this, you get bigger and bigger.

When your goldfish gets bigger, you can do one of two things — go after the piranhas and other enemies that have been trying to eat you or jump to a new bowl or tank. In any case, *CHOMP!* keeps you on your toes. The title of the game comes from the word that appears when you eat a piranha. To add to the game play, there are different shelves in the pet store and different types of fish tanks — from cold water to swamp water. In addition, there are numerous enemies in the waters of the tanks — from crabs to sea anemones. *CHOMP!* keeps your joystick hand moving with the humorous graphics and neat premise. This game comes highly recommended.

Airball ★★
Microdeal/Michtron
576 S. Telegraph
Pontiac, MI 48053
Amiga: $39.95

I hate to say it, but I was really not too happy with *Airball* from Microdeal. I was looking forward to this game for a long time. Part of the reason was that they had made a construction set for *Airball*. Usually when a construction set is released, the original game inspired a lot of players to want to design their own screens. I can't see that happening with this game. In *Airball*, you must bounce and roll a slowly-leaking ball filled with air around an evil wizard's mansion, looking for different objects. The reason I didn't like *Airball* was that the game is just too hard.

To be fair, *Airball* is very responsive to joystick movements and the graphics are very good. Even the three-quarter perspective of the game shines through. But there are just too many ways to pierce the ball and let the air out in *Airball*. In additon, the air runs out rather quickly. Even if you know where you need to go, you may not make it because you run out of air. If they made the rooms of the mansion easier to get through and gave the ball more time before the air leaks out, I would love *Airball* — I'm sure of that. But in its present form, the game is just too hard.

SimCity ★★★★★
Maxis/Broderbund
953 Mountain View Drive Suite 113
Lafayette, CA 94549
Commodore 64: $29.95 / Amiga: $44.95

It's tough to call *SimCity* a game, but it's fun. That's why it's also so hard to call it a simulation. So let's say *SimCity* lies somewhere in the middle — between game and simulation. In any case, *SimCity* had me sitting in front of my Amiga (beautiful graphics) and 128 for hours playing around with existing cities' makeup and creating new ones of my own literally from the ground up. In *SimCity*, you are placed in the job of mayor and city planner and you must run a city in all possible ways — from creating new jobs and controlling population to fighting crime and traffic.

SimCity employs an easy-to-use interface that lets you lay out in blocks all kinds of different occupants, from residential homes to fire departments and airports. By changing the city's makeup, you affect graphs of different city conditions like population, crime, land value and taxes collected. By turning the right knobs and pushing the right buttons, you can become the most successful mayor/city planner in the country. A comprehensive manual describes *SimCity* and a reference card shows the relationships of city factors to the graphs. So go ahead and build you own city or change one of the following pre-built cities: Tokyo, San Francisco, Bern, Hamburg, Rio de Janeiro, Detroit or Boston.

Prison ★★★½
Actionware Corporation
38 W. Deer Path Road
Batavia, IL 60510
Amiga: $39.95

Actionware started a new line of games by introducing the Light Phaser Gun with their first game — *Capone*. *P.O.W.* continued in that tradition and *Creature* has still not seen the light of day. *Prison* takes Actionware in an entirely new direction — distributing someone else's software. *Prison* was originally developed by a European company named Chrysalis Software Ltd. and closely resembles those Pysgnosis adventures such as *Obliterator* and *Barbarian*. This means that the game is GOOD!

In *Prison*, you have been wrongfully sent to the prison planet Altrax. Your only hope for survival is to escape in a pod that has been left behind by a downed pleasure craft. But at the same time, other prisoners are heading for the craft. So in addition to exploration, you have to also fight off a lot of other characters. *Prison* is a big game, taking up a lot of screens and a lot of your time. Expect to fight a lot of strange aliens as well as other prisoners before you find the escape pod. The graphics and sounds will keep you happy until then. True to the Actionware name, *Prison* is action-packed and will keep you on the edge of your seat with excitement.

by Mark Jordan

Interacting with *geoPublish*

O *geoPublish,* program of vastness in scope: I must again seek to make manifest your power and your glory . . . but how? Raves? Tips? Explanations? Exhortations? How about this: a stream-of-consciousness view of how one desktop publisher (me) interacts with you. A short story, of sorts, which has just two characters (you and me), one conflict (creating the Pumping GEOS sidebar you see here), and a happy resolution. I'll do it.

This is dangerous ground I'm treading on. Perhaps my readers will think me mad to write a computer column as a first-person narrative in the present tense. I hope they'll eventually see method in my madness, it being: I want to demonstrate the entire process of interaction with *geoPublish,* from the initial impulses of creation to the finished product, as I experience it.

And what better time to start that demonstration than now?

Head Scratching

Well, here I am again, a deadline staring me in the face and all I've got so far is one bare-bones idea: a comic strip with Ted and Jed. I'm not even sure if it's a two, three or four-framer. Only one way to find out—just do it.

OK, got to get my 1750 into place and boot up. Now where's that special *geoPublish* work disk I made up which includes *geoPaint, geoWrite, geoPublish,* the *Photo Manager,* my special Ted & Jed photo album, Desktop 2.0, and a bunch of fonts and utilities? Ah, here it is. Now to copy it to the RAM disk: Commodore-K. Break time (for three minutes).

Break's over. Select drive B—the RAM disk—and double-click *geoPaint.* Done. Next, it's off to the *Photo Manager* to find the drawing of Ted and Jed that I want. Gee, I'm up to 20 drawings of them now. It's getting easier and easier to do these comics, since I can borrow a head shot from a former one, flip it horizontally, shrink it or enlarge it. Well, shrinking and enlarging aren't all that easy: I always end up spending forever pixel-editing them to my satisfaction. But as time goes on and I build up a bigger and bigger



ART BAXTER

collection of these two guys, the need will cease. This is the good part about computers.

As always, I'm working with just an egg of an idea: Jed is teaching Ted another way to get girls, this time telling him he needs to develop some fancy lingo. Naturally, Ted won't quite get the point. I'm not exactly sure how it will end up but at least I can do frame one.

. . . Not bad. It's even kind of funny. In my opinion, anyway. I wonder if my readers appreciate this Ted and Jed stuff. I wonder if they have any idea why it's even included in a computer column. I sure couldn't tell them if they asked. It started out as one of those creative impulses.

Dum-de-dum . . . Frame two's done. Dum-de-dum . . . Frame three's done. Well, I guess it's a four-framer. Dang, that creates layout problems. That's the breaks, I guess: when a baby's being born you can't send one back if it's twins. Or quadruplets, as the case may be.

These four-framers really are problems. Four frames will not fit across a page, at least not in the size I've drawn them. I either have to stack them vertically, group them in a box, or do a whole bunch of shrinking and pixel-editing.

Decision time . . . I've got it: I'll worry about it later. (My all-time favorite solution to sticky problems. Strangely, it always works.) For the time being, I'll simply save each frame to a photo album. Ha, I wish it were so simple. This card structure *geoPaint* works with is a pain because I want my photos to be saved exactly on the left pixel-edge. Which means a lot of moving the image over until it lines up right.

Momentum

With my comic strip finished, it's time to crank out one of the little text pieces that always go into this thing. Somehow, don't ask me how, while I was drawing an idea came to me: do a poem. Again, I'm not working with much more than an amoeba of an idea, but 'tis enough.

Might as well use *geoWrite* to write it, much as I dislike it. But it doesn't make a lot of sense to shut everything down, fire up a different word processor, then go back to GEOS, TextGrab it, etc. One good thing: since I don't know exactly how much space I'm going to need, I can allow myself the luxury of typing until the poem is rightfully finished.

Ta-da. A poem. That was actually quite fun. With the poem and comic done, I can start putting together my *geoPub* document. Boot time and head straight for the *Photo Manager* to copy the first comic frame into a photo scrap. I'm working in the Page Graphics mode, the only place to do bitmaps. Well, Master Pages allows them but you can't see them in Preview mode. I haven't figured out why yet. Page Layout mode does have one use for bitmaps—to flow text around them. Maybe I'll do one of those in the third article.

Now is the Later that I said I'd worry about. Let's see, I could lay out the comic strip in a box, two on top, two on bottom. Nah, I used that last time and I want variety in this column. However, if I decide to go vertical, it seems like there will be too much verticality on this page, what with the logo running up and down. Plus, that will leave an area too wide for a single column (for my taste) forcing two skinny columns which will emphasize the verticality of the page even more. No perfect choices. Aw, what the heck, I'll just stack 'em for now and worry about verticality later.

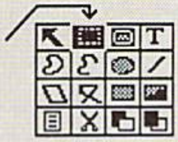
Thank goodness for Zoom mode, the only way to line up bitmaps. Let's see, should I shut off any display options to speed things up? Don't need to, yet, since the bitmaps are all I've done so far and I need to see them. It is nice, though, that *geoPub* allows the options. I wonder if casual users are aware of this feature of the

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Pumping GEOS

Group Dynamics in geoPublish

One oft-overlooked feature of geoPublish that certainly merits some attention is the Group Select tool available in the Page Graphics and Master Page toolboxes. It's the tool to the right of the pointer.



The primary function of the Group Select tool is to do what its name suggests, select a group of graphics objects at a time. Any graphics that you do from the Page Graphics or Master Page mode are selectable including bitmaps and text-graphics. Once selected, you can do anything with the group that you can do by selecting a single object: move, resize, delete, or shift to the background. The value of this becomes apparent when you've got an area of graphics aligned just right but decide you want to move the entire mass.

Another nifty use of this tool shows up when you do some zoom-mode editing of graphics. Any changes destroy part of the graphics area and make it difficult to see exactly what the result looks like. You could redraw the entire screen but that takes too long. By using Group Select, you are able to redraw just the region you want.

Them Hi-Tech Blues

(Gonna Spend My Troubles Away)

It started out just the two of us:
My C-64 and me.
Oh, true, there was that Datasette,
And a black and white TV.

Programs were typed, not bought, back then
From many a magazine listing,
And when they crashed or wouldn't run,
My keyboard got a fisting.

But Commodore equipment holds up well,
So I bought the things I longed for:
A printer, disk drive, and a mouse,
And at last, a color monitor.

That printer -- a 1525,
I loved that baby lots.
Today 'bout all it's good for
Is to play 'Connect the dots.'

The Amiga and 128 came in '85,
"Now what shall I do? " I quoth.
Like lightning, the answer came in a bolt,
"I'll have to buy them both!"

Beneath a mounting pile of ware,
My frugal ways were jarred.
Manuals, cartridges, and two hard drives,
And all of it thanks to one slim, plastic card.

But O, those ads kept on shouting,
"Version 98.6 really races!"
Soon the mail order houses across the land
Knew me on a first name basis.

Now I'm out of money, I'm down on my luck,
The car, it just had to go,
I'm afraid the house won't last the month,
With the banker beating on my do'.
(Repeat last line)

Well they can have that car, they can have that house,
But they ain't getting my equipments.
Cause I know a place 'neath an overpass,
Where the UPS does shipments.

It's a bit cool there in winter-time,
And summers are a real stresser.
But on a pole in a corner there's a hot 110,
With a built-in surge-suppressor.

I've learned a lesson or two, I guess,
All you newcomers -- grab a chair,
Here's my wisdom, boiled down to just one phrase:
Have 'em ship it, next day air.

The Adventures of Ted and Jed



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program. I need to emphasize it some time.

I don't need to be very careful about where I place the second bitmap at this point because I have no idea exactly how it will line up. But I do want to note exactly where my crosshair is before clicking so I can see what kind of placement I'm getting. Good, it's only off by a pixel. I'll just move my cursor back to where I was last time, adjust it by one pixel, and place another of the same bitmap down. Great, it's just right. Now to cut that other one out. This method sure beats my old method of moving it with the Move gadget. Actually, that way would be superior if it didn't erase the bottom edge of the bitmap I'm trying to align things with. Frames three and four are next.

Comic's done. Since I already know what my heading is going to be —"The Adventures of Ted and Jed"—I might as well do that now and put a border around the whole thing, thus unitizing it. I'm planning on laser-printing this page, so I can choose any point size and be assured it will look sharp. Just need to try several until I get one that fills up the area above the comic strip. I'll need two rows, of course. If I were going to dot-matrix print it, I'd be a lot more selective about font sizes since some of them don't print out very nicely at certain off-sizes.

Back to Preview mode to take a look. Too vertical, just as I thought. Hey, I know: why not move the logo to the top? I know it's crazy, but it just might work. It does. Now the whole vertical problem has been solved. Another solution thanks to Later.

Doing this logo used to be such a pain back when I didn't have the sense to put it on the Master Page and save it as a library. But I guess that labor is paying off now because I know exactly how to lay it out, the font to use (Tolman) and the attributes to go with it (72-point, smoothed, bold, justified Across and Centered.) Too bad that the laser-printer doesn't print patterns like it should. That inner box looks nicer with the diagonal line pattern the screen shows instead of the gray-scale the laser printer translates it to. I could create some diagonal-filled boxes in *geoPaint* and import them as bitmaps but it's a pain, and I'm not sure what the laser printer will do to them. It doesn't look that bad.

With the logo now in place I can see that my comic strip needs to be moved down a little and over. The best place for it is on one of the margins; in the center it would look ridiculous, dividing my text columns into two discrete sections. My feeling is it looks most balanced on the right margin so I'll move it there. I'll use the Group Select option to grab the whole shebang and move it. Hm, I've never really mentioned Group Select before in a column and it's so convenient. Maybe that's what my third piece can be. I better jot the idea down in case I forget it.

Balance

Time to get the poem in place. So far I've got two items and they're both whimsical ones. I better put the poem at the bottom of my open area and slip a more serious piece (like something on using Group Select) at the top to help balance things in terms of content. Balance is my overriding standard in creating a *geoPub* page. But not symmetrical balance.

Balance works in several ways, visually as well as content-ually (not a word, but should be). And concerning content, there must be balance according to tone, importance, information, etc. Right now, my concern is visual balance. With the eye-grabbing comic strip on the right, it's good to have the left two-thirds of the page filled with text. Likewise, by placing the poem—which, it turns out, is going to gobble up almost two-thirds of the remaining space—at the bottom, its larger text area is made less prominent. Maybe I carry this balance stuff too far. I don't think so.

OK, so I set up two columns on the bottom two-thirds of the text area for the poem. Now to ripple it. Next, to the editor to see how much left-over space (or text) I have. There's about an inch of text left over. Also, the first column of the poem broke in the middle of a stanza. That might not matter for prose, but it does for poetry. That means I must resize the text area. Ripple it again. Go to the editor. Check it out. More adjustments. Re-size, re-ripple, re-check. Finally, it's just the way I want it.

Well, not exactly. Some compromises were made like the reverse indent for the poetry lines that were longer than one column width. That's acceptable in poetry but I'd rather not had to do it. It would've been worse had I not readjusted the gutters. Also, I hated taking that one stanza all the way out because of spacing problems.

Let's take a look. My, I've only got a small area to fill with . . . what was that I wanted to write about? Oh, yeah, Group Selecting. That's OK, it's a small topic. I might as well exit *geoPublish* and type up that piece.

Back to *geoPub.* Naturally, I'll use the same columns for this piece that I used for the poem though I might reset the gutters. Did it. Ripple time. Uh-oh, I've got a whole paragraph that doesn't fit in place. Dilemma number 99: should I shorten the poem (No way), choose a smaller point size for my text (Maybe), or simply condense the Group Select piece?

I choose condense because by deleting this last paragraph it'll fit exactly. Philosophical thought: do magazine readers realize how much of a role available space plays in things? Not only does it cause things to be deleted, it also has a hand in adding bits of trivia, fillers, etc.

Oops, I forgot about doing a flow-around graphic, and this article is just the place to do it. A depiction of a *geoPub* toolbox would be excellent here, just to make sure they know which tool Group Select is. Plus, as we all know, nothing helps draw a reader into a text article like a graphic.

But what a pain. I'll need to exit *geoPub,* select a paint driver, make sure my screen-dump utility is on the disk, reenter *geoPub,* get the toolbox on the screen, then dump the screen to the printer. And that's not all. Then I'll need to enter *geoPaint* with the resulting screen dump, copy the toolbox to the *Photo Manager,* click, click, click, ad infinitum. And that doesn't even include re-adjusting the text after I put the bitmap in place. Tedious? Like picking up dropped Tic-Tacs®. But watching that text flow around that graphic, it's worth it.

Winding Down

Hey, I'm almost done. Just need to do the headings, draw a few lines to separate columns, add a Vol/Num graphic, and that's about it. I'm really anxious to see this thing on paper, but first things first: I must save this to my work disk. I just don't trust a RAM disk. REU means: Really, Extremely Untrustworthy. Ha-ha, just kidding there, 1750. My policy: save every twenty minutes or so and always before printing.

I kind of like the way these laser fonts print out on the dot matrix. Of course, they won't look quite the same from the laser printer. Some things might not line up exactly as they are here. But it'll be close enough. This "beta" version looks good, almost perfect. Ah, but the poem needs a few lines re-worked. And the comic strip, I really think I need to change Jed's line a bit in frame two (what a pain that'll be: I'll have to go all the way back to *geoPaint,* then through the photo al-

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by Shay Addams

Headed for Hillsfar with a Lockpick in my Hand

News and opinion from a leading explorer of those fantasy realms called adventure games.



Of the many breeds of adventure game on the market, surprisingly it is the "action adventure" that's evolving fastest. Perhaps it's because such games, which in the past consisted primarily of "shoot-'em-up-in-a-maze" affairs, have so much further to go than the already advanced role-playing games like *Bard's Tale* and traditional adventures like the *King's Quest* series. I've never quibbled about my less than enthusiastic regard for action adventures, but with the innovations of *Times of Lore* and other recent releases, that sentiment has slowly begun to shift.

Now SSI's *Hillsfar* is pushing that particular envelope even further, offering the first AD&D scenario involving arcade-style challenges (five of them) that center on a series of quests in the Forgotten Realms. Another recent action quest, *The Last Ninja 2,* is less inventive but does emphasize puzzle-solving more than the original *Ninja.* (Both are for the Commodore 64, with an Amiga *Hillsfar* on the way.)

Since I enjoyed getting killed in *Hillsfar* more than in *Ninja,* let's visit that quaint little town first. To get there, I had to ride a white horse down a long country road from Camp. In this sequence, the joystick spurs the horse into jumping bales of hay and other obstacles and enables you to duck the occasional arrows that come your way. Graphics scroll cleanly, and the animation is brisk in this and other animated sequences.

Inside the town, I observed a typical top-down view of its streets and buildings, while a window on the left held a 3D picture of the scene I faced (which reminded me of the technique used in *Alternate Reality.*) It's in the mazes that *Hillsfar* takes a sharp left at the intersection of Action Street and Adventure Avenue. Dungeons are displayed from an oblique-angle view: you're looking down on the scene, but from an angle that offers a refreshing perspective especially well suited for action-oriented dungeon-delving. Rather than explore these mazes slowly and carefully as in most RPG's, you've got to race through them as quickly as possible, for a horizontal bar over the picture reminds you the time limit is running out: if *you* don't run out of the maze in time, the guards will seize all the gold you just found and toss you out. To make it even harder, the designers (Westwood) won't let you exit through the entrance; only after a message announcing that the exit has appeared in a random location can you even begin to seek your way out of the maze. This makes mapping more complex, though the pause feature is useful.

You don't get to fight the guards in the mazes, for combat is limited to the Arena. Here you'll battle gladiators like the Red Minotaur, using keyboard or joystick to block, attack and dodge. It's not as complex as the combat scene in *Moebius,* but still a lot of fun and far easier to master. Dealing with non-player characters in non-combat situations proved an even simpler task, for such encounters are handled by choosing from simple menus or typing Y or N.

The Thief's Greatest Test

A more difficult challenge lies in store when you run into a locked door or chest. Instead of just using your Thief's lockpick and hoping it's high enough to open the door, you must actually pick the lock. A side-view shows the lock's tumblers, each with a distinct pattern. Below, your set of lockpicks is displayed, and you have to match the right pick with the first tumbler in order to "pick" it. Get it wrong, and you may break the pick or jam the tumbler. Get it right, and you've still got two to seven more tumblers to pick! Not enough pressure for you? Then consider the time limit, reflected by a burning fuse whose initial length varies with the lock's difficulty.

You've got to do the same thing to open many of the chests found in the mazes. Sometimes you can just bump into a chest and automatically grab some gold, a potion or other useful item. But most of the valuable treasures are protected by these insidious locks. It took me a few days to hone my "put the square peg in the square hole" skills, which is basically what this challenge consists of, and at first I was extremely frustrated. It's a unique thiefly challenge, however, that is *Hillsfar*'s most distinctive feature. And you can always fall back on a magic Knock Ring or Chime of Opening to force the lock, which I always had to do with those with more than three tumblers.

Little other magic is available in this game world, though your characters may be a Magic-user. Import an existing Mage from *Pool of Radiance* or *Curse of the Azure Bonds* (the *Pool* sequel), and he'll lose his spells for the duration of his stay in the Hillsfar area. You can also import a Fighter, Cleric or Thief, or create a new character that may even mix classes. (If you don't use a Thief, non-player characters will offer to pick the locks for you if you give them half the gold; however, you merely get to use their picks, and must still match them to the correct tumblers.)

Each character class will find a set of three tailor-made quests to fulfill, which entails recovering items from the various mazes. (Clues to combat, Guild locations and other puzzles are found everywhere, and a novel feature allows you to review the most recent one by punching the R key.) All mazes aren't found in the town. When you exit, a "dragon's-eye view" map shows the countryside and roads connecting other sites, such as the Trading Post and a shipwreck. To reach these, you must

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> "A better educated audience will have a different set of desires, and will demand more sophisticated television programming."
>
> –St. Lawrence

The revolution began this past February with the awarding by Commodore of an Amiga 2000HD (hard drive), an Amiga A2300 genlock, and a variety of desktop video software to 20 school districts across the United States. The grant program was coordinated with the National School Boards Association's (NSBA) Institute for the Transfer of Technology to Education (ITTE).

Technology Leaders

ITTE serves 167 national, Kindergarten-through-12th grade (K-12) school districts—called the "Technology Leadership Network." Network members are districts that represent 37 states and Canada, with 68 students in the smallest district to over 100,000 in the largest. Of the 167 members, about 150 are school districts. The next largest group of members is composed of Regional Service Centers in Michigan, Kansas, Texas, California and New York.

ITTE Director Jim Mecklenberger comments, "These school districts gain valuable experience with state-of-the-art technology. In return, they report lessons learned back to ITTE for dissemination to other schools. ITTE network schools are the first serious technology adopters. In the case of the Amiga grant program, many school personnel knew of the Amiga and its capabilities. They realized that the Amiga computer is the technology leader in desktop video, and that the price is economical for their school systems."

According to Mecklenberger, ITTE has asked each of the 20 winning school districts to submit a report as well as the video, which will in turn be published by NSBA-ITTE for any interested school districts.

Commodore's participation in the grant program is headed by John DiLullo, Education Manager. DiLullo spent 25 years teaching and administrating computers and technology in the Philadelphia school district before joining Commodore. DiLullo notes, "This video grant program represents the re-establishment of an educational grant program for Commodore."

According to DiLullo, "We developed our grant program strategy to increase the technological awareness of the general public about the Amiga—especially its video capabilities. The problem that exists is that teachers who don't already use computers will not suddenly embrace the computing technology."

"On the other hand," notes DiLullo, "everyone is familiar with video, because 98% of the schools and 60% of homes have VCR's. Today's children have grown up with TV. Teachers are comfortable with multi-media techniques, and have VCR's in their classrooms. These same teachers can immediately learn the computer with video without any other concerns. Therefore, video represents a real technological break point in the education environment."

DiLullo comments, "We brought the power of big-time education—those same techniques used in government and industry—to schools. We have provided an opportunity for schools to participate right now at a level that they can afford. The Amiga is an efficient and affordable delivery system for education. For example, more and more video laser disks are being produced for education. It is just a question of marrying the Amiga to the video disk technology. You can do it very high-end, or do it very inexpensively with the Amiga. The Amiga 2000HD costs about one-third the price of a Macintosh II. Similarly, schools may pay as much as $40,000 for beginning IBM desktop video systems. But, a $2500 Amiga system will do the same thing.

"We want to stimulate thought and to raise the level of expectations as to what can be accomplished with computers and video—particularly using the Amiga. That is basically our purpose with this grant program. The more exposure people have to the Amiga, the more capabilities they will discover.

"For example, multitasking might otherwise be incidental to video. However, it isn't if you are doing work at the same time as you are receiving a cable TV video signal. The Amiga's built-in speech capability might also be incidental to video, because most people will use an external video source most of the time. However, this speech capability is very important to education, and has many creative desktop video applications."

DiLullo also anticipates ongoing work with the grant recipients in other areas where video can be used, such as teacher training. Also, there is some anticipation that a follow-up grant program will emerge for new educational applications.

"It Was Really Exciting"

In order to make all 20 Amiga grant recipients fully aware of the Amiga's capabilities, Commodore presented a two-day training session that included genlock card installation and operation, Amiga applications and operation, and various software demonstrations. DiLullo noted, "All of the winners absorbed the technology rapidly. There was a general sense of awareness and excitement. We knew that when we got the grant winners together, they would think of even more applications. The ability for everyone to share their proposals increased the expectations for the educational applications that could be done on the Amiga. It was really exciting. It was very rewarding."

Also making presentations at the training session were Kenneth Brumbaugh, a full-time educational consultant, and Jim St. Lawrence, a TV producer and consultant. Both presentations covered a broad range of video, sound and graphics software applications. Most of the training session was "hands on." DiLullo commented, "The most surprising and delightful aspect of that event was how excited these educators were with their projects."

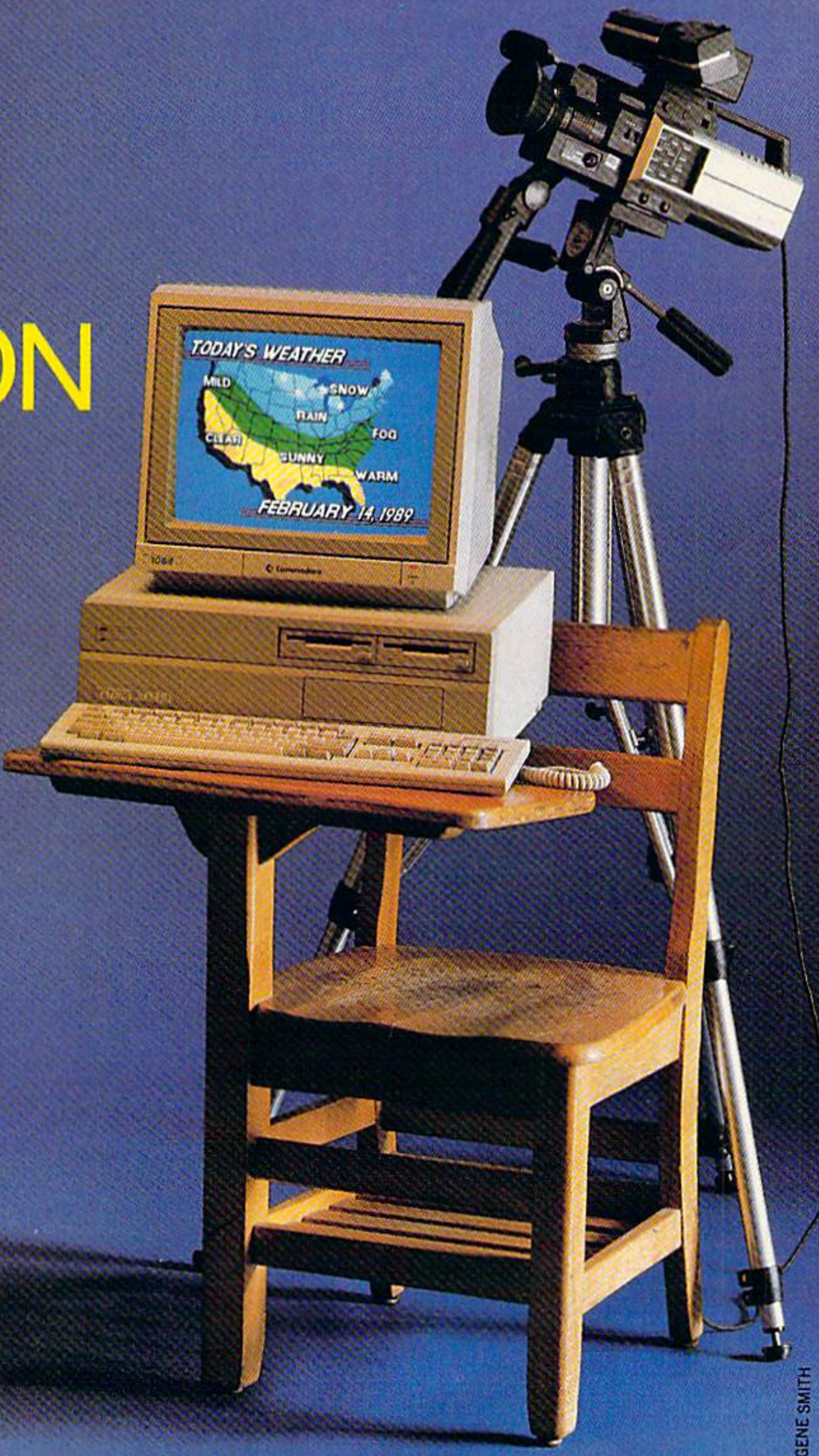
Educational Desktop Video Value

In spite of the enthusiasm of the Amiga grant winners, there are probably skeptics who question the use of desktop video in an educational environment. Not Jim St. Lawrence, one of the speakers at the winner's training session. St. Lawrence—who

AMIGA DESKTOP VIDEO IN EDUCATION

by John Pustai

Amiga has claimed the educational desktop video market as its own. Elementary and high school students are connecting camcorders, laser video disks, VCR's, and editing machines to their Amigas, giving new meaning to the expression "hands-on" education. Titling, animation and frame-grabbing software abound. Teachers and students have adopted the "genlock" battle-cry for the educational desktop video revolution—a revolution sparked by the Commodore/ITTE Video Grant Program.

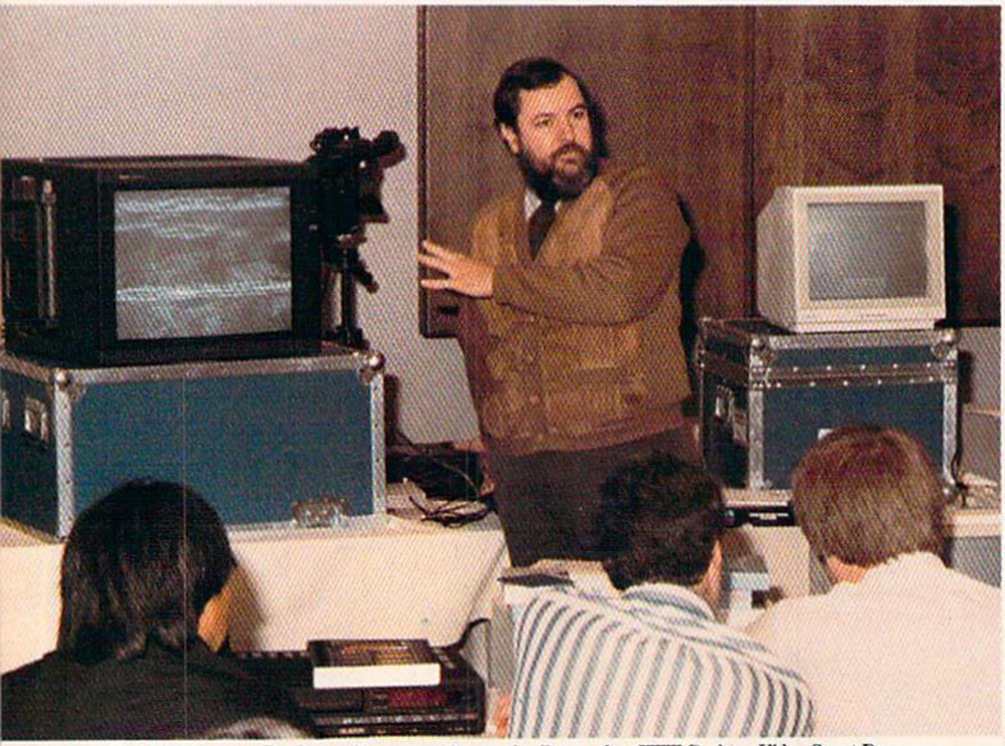


GENE SMITH

could challenge even the most hardened skeptic—is a professional television producer/director, a passionate educator, and owner of SL Productions. He has also written and produced numerous scholarly presentations on digital imaging, two-dimensional animation with computers, and 3-D modeling and animation for the New York Institute of Technology.

Because of the importance of educational desktop video, it is worth a moment to provide his professional credentials. St. Lawrence's most significant recent work is his contribution to "Power On! New Tools for Teaching and Learning." St. Lawrence is chief technical advisor to, and author of, one chapter and various sections of this report, commissioned by the U.S. Congress Office of Technology Assessment and by Congress in 1988. The report evaluated the state of computing and electronic technology in education, defined as "interactive technologies." The report also made recommendations to Congress for further funding for those interactive technologies.

In addition to his work with Congress, St. Lawrence is also a prominent guest lecturer. His talks include "Video in the Classroom," a presentation to the Council of Chief State School Officers-Technology Conference; "Desktop Video," the keynote speech to the Connecticut Computer Educators Annual Conference; "Computer Graphics in Education," presentation to NYSIGGRAPH; "Implications of New Communications Technologies," a lecture to the New York chapter of the World Future Society; and "Interactive Computer Graphics," a lecture to the New York University, School of Interactive Telecommunications. St. Lawrence has also served as chairman for the "Seminar on Computer Animation and Special Effects."



Jim St. Lawrence, Producer, Director, addresses the Commodore/ITTE Desktop Video Grant Program training session participants.

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St. Lawrence's credentials as an educator are equally impressive. He is lecturer in the "Program in Arts Management" at Columbia University. He serves as Director of Administration and Production for the Interactive Technologies Laboratory of the New York Institute of Technology (NYIT). Also at NYIT, St. Lawrence is adjunct professor for the Masters Program in Communications and Arts in electronic field production. He has also taught interactive education and computer graphics systems at Wesleyan College.

His business experience includes work as a member of the Senior Scholars Panel for the "Apple Classroom of Tomorrow" program; technical consultant to Children's Television Workshop (creator of Sesame Street and Electric Company); and work on the Committee on Educating Americans for the 21st Century for the "National Science Board." He has been a contributing editor for production techniques to *Videography Magazine,* having written the "Video Class of 2000" for that publication.

PBS-watchers know Jim's work from *Fast Forward* (TV Ontario)—a documentary series about advances in microcircuitry, communications systems, computers, television, and bio-medicine, and the fundamental changes they bring to the human environment. Jim conceived, produced and directed *Fast Forward*'s 26 programs which have been aired in more than 30 foreign countries, virtually every PBS station in the U.S., and more than 150 institutions of higher learning as courseware.

New Form of Literacy

It is with those credentials that Jim St. Lawrence offers support for desktop video in education. He sums up his philosophy as follows: "Being an educator and broadcaster, my particular interest is in the dissemination of video and computer equipment in schools. Although children watch from four to six hours of television each day, they don't really know what they are seeing. The only way to make them critical viewers is to give them the tools, and let them discover how those tools are used. It is a new form of literacy.

"I am a dedicated educator," states St. Lawrence. "I have been pounding on doors and shouting that kids need to be educated in a certain way. Commodore has created a machine that is ideal and has shown a great interest in getting this kind of education in the schools. By putting cameras and computers in the hands of children as creation technologies, those children discover—in a way that is not possible using any other method—how television is made. They begin to understand the language of television. They learn to appreciate the medium. This appreciation is important in the long run, because television is an information medium, not just an entertainment medium."

According to St. Lawrence, television cannot become an information medium until people "understand its grammar. And, you can't understand the grammar unless you work with it. It is just like reading and writing. You can't understand properly how to read unless you know how to write. You don't properly appreciate music until you learn how

to play an instrument.

"But, that is only part of the story. Of course, you play the instrument not to learn how to listen, you play to learn how to play music. And, similarly when kids and teachers learn how to use the tools that video provides, you find that it can be a very empowering device."

St. Lawrence alludes to the power of television in many ways. "If we are to remain a democracy, and not be led around by and subject to our TV's, we have to cease to be passive viewers, and become active participants." St. Lawrence says that he is not trying to teach kids *what* to watch on TV, but *how* to watch TV. "Their parents may have tried to get them to understand what to watch, but nobody has taught them how TV programs are created."

One example of critical watching is given by St. Lawrence. "In a 15-minute section of a TV news program, I could show examples of six or seven editing cuts, and you would be totally surprised, because it would look like a continuous news event. In news, this editing is significant. Even more important, how many edits do you *hear?* Most people think of picture editing when they think of editing. But, just as important is the audio. In fact, the audio is perhaps more important than the picture. But very few people think about audio literacy. Yet, audio is always present. There is music, which influences the way we view the pictures. All of these are elements which go into the way the world communicates."

Because of his experience, St. Lawrence views himself as the perfect viewer. He is aware of the music, editing, lighting and camera techniques and notes that all of the elements are significant. "I see where the cuts are happening. I know where somebody's speech has been cut out or left in. I know how it is shot. I know the questions are asked at a different time than the answers are given. However, somebody who is not aware of this editing can be easily misled."

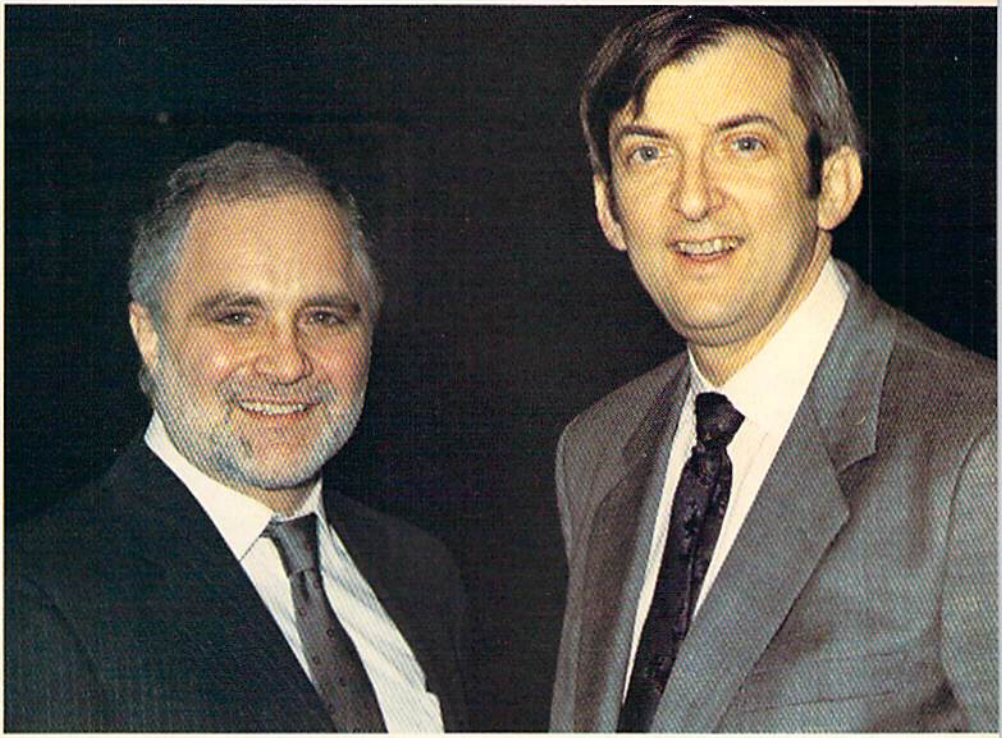
St. Lawrence believes that the knowledgeable viewer will become the learned viewer. As a result, television will become an educational medium. "A better educated audience will have a different set of desires, and will demand more sophisticated television programming. As an example, he points to the difference between British television and American television and notes that it is partly the British educational system which increases the sophistication of the viewer. "They have a better critical awareness of what is available. But this critical awareness has to be taught from the ground up. People will demand more sophistication when they know what is happening."

Technologies Converging

St. Lawrence notes that the technologies of computers, video and telecommunications are all converging. "We have to ask where the technology will be 20 years from now. Computers and video and telecommunications are all coming together in new systems and in different combinations such as fiber optics and Integrated System Digital Network (ISDN). In 20-30 years, we will communicate using video on a daily basis."

great promise in them, we see applications in the classroom, but we don't really know if these technologies are effective in the long run. These are questions that need to be answered."

I asked St. Lawrence if there should have been a different approach to the Commodore/ITTE Video Grant program. He indicated that the choice of recipients made to have the widest variety of applications, in order to compare different applications. St. Lawrence noted, "With this first set of winners, you can look at various age groups and find out what they do with desktop video. It was a good choice of winners. It was not necessary to seed the Amigas into colleges. A lot of colleges—such as Ohio State and Rensellear—are already into Amigas. The colleges already have their media departments. Many of



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John DiLullo, Commodore Education Manager (left), and Jim Mecklenberger, Director, NSBA's ITTE.

"In fact," continues St. Lawrence, "Some of us already use video on a daily basis. I will send a tape to somebody as quickly as I will send a letter. I'll make a tape, add a title, do some animation and use the tape as a presentation of my ideas. I use this technique in my talks, as well as the Hollywood-type productions I do.

"Because the merging of these technologies is so new, the literature about this merging is small. We don't yet know how best to use these technologies. We see

them are using Amigas. Really the need was at the lower educational levels."

St. Lawrence sees the Commodore/ITTE Video Grant Program beginning to answer many questions. "The grant winners will serve as research test beds to help answer these questions. We can ask the winners what the technology does for them, how the technology affects education, what should be the direction of the technology for the future. When we get an-

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MIA BOSNA

THE EQUALIZER

Vietnam was embroiled in war on August 16, 1966, and the combination of tension and heat made the country all but unbearable to the U.S. soldiers fighting there. Grady Beard, a member of the 1st Division, was 22 and had just returned to active duty after recovering from a wound caused by a sniper's bullet. As he and seven of his buddies headed toward their bunker, a mortar shell erupted in flames a hundred feet away. Beard never heard the second shell, but in a flash it engulfed his platoon and his life was changed forever. He remembers screaming for a medic but nothing more. Seven days later Beard regained consciousness in the Third Field Hospital in Saigon. The mortar shell which snuffed the lives of three of his companions had spared Beard, but had taken both his legs. War had transformed Grady Beard, healthy GI, forever into a handicapped veteran.

For Beard the most difficult barrier to overcome was the acceptance of his handicap and getting on with living his life. Like hundreds of thousands of other handicapped people, neither time nor treatment will remove his disadvantages. The only choice handicapped individuals have is to learn to accept their situation, adjust their environment to minimize the disability and adapt.

Beard says he wasted several years mired in bitterness at his situation, but at last, with the help of a computer, he has his life back on track. Sitting in his wheelchair, Beard puts in a full, profitable work day using his home computer and a modem. Although Beard's mobility was hampered forever by the war, his productivity has not suffered, thanks to his computer connection.

The Equalizer—Computers

None of us are guaranteed health. Every year millions are handicapped by accidents, illnesses and birth defects. In America alone, 400,000 people are rendered handicapped by strokes annually. But because of the advancements in medical treatment and technology, the effect of those handicaps are being minimized, and the quality of life is being maximized. And many of these improvements are possible only because of personal computers.

Computers are being used in two ways to minimize the effects of handicaps. Computers and modems are allowing the homebound to communicate, attend school and work with the world. While computers can't cure the afflicted, they can diminish their dilemma and in a real sense equalize the difference between the handicapped person and the rest of the population. They can be profit-making, powerful, flexible workstations for individuals who want to, or must, work from their own homes. Perhaps the nicest thing about computers is that they perform the same regardless of whether the user can walk, see, hear or speak. They are simply tools. If you can input your ideas, the outcome will be the same regardless of your health. To the keyboard we are all equal. And with the use of an easy input device, like a mouse, light pen, or graphic tablet and stylus, even those individuals who have difficulty using the keyboard can interact easily.

The second way computers are being used is to teach, assist and rehabilitate those with disabilities. While talking software is aiding the visually impaired, display screens are communicating with the deaf, and patient software is teaching and encouraging those with learning disabilities.

The Quick Fix

For thousands of the world's handicapped, the keyboard and power of the computer alone are all that is required to return them to the mainstream of productive lives. With the assistance of a modem many handicapped workers can work at home and send their finished projects to the main office using telecommunications software. The computer doesn't discriminate against the person at the keyboard, it simply responds to input.

The Not-So-Quick Fix

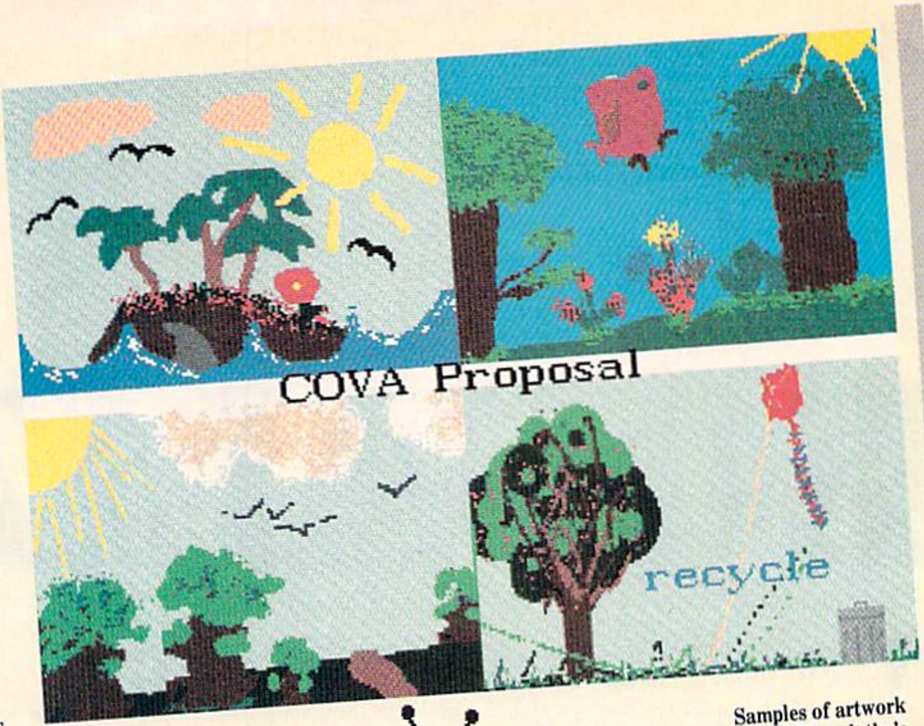
Unfortunately, minimizing a handicap cannot always be accomplished by just supplying the individual a standard computer. Those with more severe disabilities may require some extra assistance like speech simulation or special input devices. If the individual doesn't have use of his hands, another entry route must be approached. Thankfully, the computer developers have supplied a multitude of entry devices.

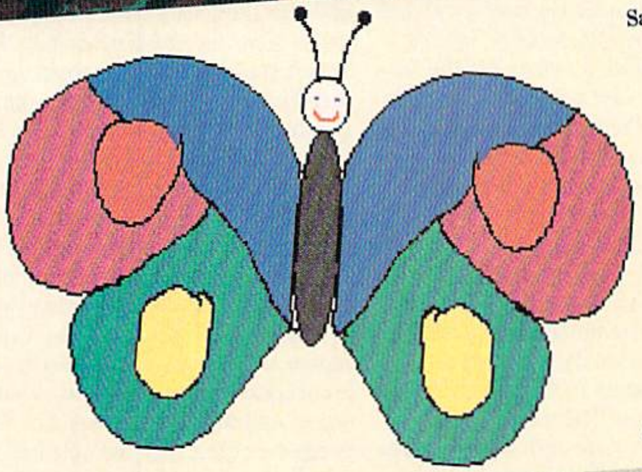
Without doubt the most helpful input device for most handicapped computer users is the mouse and the icon interface in which it normally resides. While most of us are pleased with the friendliness of software like the 64/128's GEOS and the Amiga's Workbench, handicapped individuals view these innovations as godsends. By using a mouse-controlled cursor and icon-represented software, many movement-restricted users can use a computer just as well as those of us who have full control of our hands. That explains why the Amiga's easy-to-use interface is so appealing to

by Howard Millman

A ROAD LESS TRAVELED

Meredythe Dee Winter's name sounds like a stage name and for good reason, she's been working in the film and TV industry for the past 12 years. Trading on her show business background, Meredythe, now 29, uses Amiga 500 computers to introduce children to the magic of computerized special effects, animation and graphics.





Samples of artwork by Meredythe's students.

With a bachelors degree in visual arts from the University of California, San Diego plus a masters degree in creative art from the San Francisco State University she candidly describes herself as a "technobrat media monster".

Through her non profit organization, Arts and Technology, she hopes to breach what she sees as a pattern of homelessness and substandard education afflicting underprivileged, handicapped and underserved children.

Operating on a shoestring budget comprised of small grants, she visits local elementary schools and the St. Vincent DePaul-Joan Kroc Center for the Homeless

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handicapped individuals.

The Commodore 64 and 128, on the other hand, require special software to bridge the user-system gap. Staci Glovsky of Berkeley Softworks reports that several schools for the handicapped have adopted these two inexpensive systems and their GEOS programs just for that reason. Perhaps, dollar for dollar, GEOS with its powerful icon-controlled interface puts more icon computing power in the user's hand than any system on the market today. When both power and cost are compared, it is not surprising why such a setup is so appealing.

In May of 1987 we reported on a blind graduate student, Greg Capps, who used software to synthesize speech and minimize his handicap. Using talking software, including a talking terminal program, he not only completed college but went on to earn a master's degree in Clinical Psychology. Without the aid of his personal computer he says he would never have been able to do either. The Amiga, with its built-in synthesized voices and ability to reproduce digitized sounds, makes it a perfect computer for the sight impaired. Much of the software being released for the system includes an option to speak, as well as display text. Fortunately, Capps' success is not unique. Combined with more powerful computers which can translate ASCII code into understandable words, new programs sensitive to the needs of the sight disabled are removing many of the barriers which separated the blind from the mainstream of society. As Capps said, "at a keyboard, we are all equal."

Despite the potential, to date the most underutilized feature of any Commodore system is the ability to speak and hear. The handicapped specialists I talked with were excited about the potential of all three systems but wondered why their voice features weren't being used more to help the handicapped. One of the most publicized features of the Amiga when it was first introduced was its built-in speech abilities. But too often that power goes untapped—especially in the field of aiding the sight impaired, who could benefit most. By the same token, Covox Incorporated quickly developed 64 hardware which put the power of digitized sounds at the disposal of programmers. They also offer hardware/software products which enable voice recognition. But to date the potential of those developments to aid the handicapped has not been fully imple-

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by Howard Millman

THE COMPUTER LEARNING FOUNDATION

The estimates vary but between 20% and 30% of America's teenagers never finish high school. Add this group to the nation's 40,000,000 functionally illiterate adults and the result is a staggering number of marginally employable workers competing for a shrinking pool of unskilled jobs. The size of this grim assembly swells each year by an estimated 2.3 million, including immigrants.

Functional illiteracy, according to an article in *Nations Business*, is defined as meaning an adult "cannot read, write or reason well enough to compete in today's economy."

These adults and teenagers are not so much uneducable, but unschooled. According to the non-profit Computer Learning Foundation, functional illiteracy looms as a national crisis which technology, specifically computers, can moderate.

With Computer Assisted Instruction (CAI), adults and at-risk students can learn marketable skills. Computers, with their endless patience and non-judgemental presence, are ideal instructors. Only with CAI is it economically feasible to establish an effective one-on-one scenario to prepare these millions to enter or re-enter the workplace.

The number of computers is rising exponentially as manufacturers ramp up production to meet demand. But with teachers and trainers, the situation's reversed. Without computer literate teachers in schools and instructors in training centers the implementation of computer technology crawls to a near standstill.

So recent is this technology, most teachers rarely used a computer while in college. And although training classes for educators are gradually increasing in number, many classes are offered only in larger, urban school districts.

Part of the problem is in getting information to educators, parents and users who want and need it, regardless of their locations. Not abstract information but specific "How to/what is" advice, about computers. That's one of the high priority goals of the Computer Learning Foundation.

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by Howard Millman

AGAINST ALL ODDS

Molly Shannon, an occupational therapist for the Hurst-Euless-Bedford school district, never sees the "average" child. In a world where most kids worry more about zits, dates and curfews, her students instead struggle with the overwhelming problems of crossing the boundaries of their restricted world.



Molly is holding a switch which John is operating with his head. He is looking at Melinda intently because it is her turn. John uses the switch to control the computer and Melinda uses the keyboard.

Any professional's skill and dedication has limits and in most cases that limit is time. With many children requiring occupational therapy, Molly needed a means to extend her skills and help these kids help themselves. She found it in computers.

Molly regards computers a vital component of her therapy. "With a computer's help, handicapped children don't need continuous instruction to develop independent skills." Computers provide, she says "An incentive to continue facing the day-by-day challenge of living life to its fullest."

Just completing everyday routines count as an achievement for these children. Their life is an uphill climb, and the summit's a long way off.

"My Name is John"

This past April, twelve year old John Hensley discovered a small piece of chalk lying in the driveway near his Lubbock, Texas home. Grasping it with his toes, he laboriously scratched four words into the blacktop. His message said the words he cannot speak. He wrote "My name is John".

John, a victim of cerebral palsy, wants and needs to communicate. In his quest to achieve his goal he's acquired two vital allies — Molly Shannon and a computer.

Tests reveal John possesses average intelligence. He understands spoken words and knows at least the basics of language arts and math. But he has little control over his arms or speech so to express his thoughts he requires a specially adapted computer and software.

On the computer John uses, a moving cursor paces through the alphabet strung across the bottom of the screen. The cursor stops briefly at each letter. John uses a head switch to lock in the chosen letter or number. Thus, he painstakingly creates each word letter by letter.

When John was six years old, using a computer specially adapted for the disabled at UCLA, enabled him to write his first sentence. Pam Hensley remembers

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Looking Back in Wonder:

In its formative years, most of the original titles for the 64 were either holdovers from the videogame era or clever duplicates. In the early days of the 64, small independent software developers sprang up like mushrooms after a warm rain. (This same phenomenon is now being repeated for the Amiga.) Most of these companies were host to rogue programmers boasting high creativity and a slightly bent sense of humor. It was the beginning of the 64's salad days. Here's a nostalgic look at those games that won the hearts of early 64 owners.

Every generation has heroes — it's a necessary part of growing up. Some are real-life people who challenge us with bold ideas and accomplishments. Others are fictional characters designed to excite and entertain. They enrich our lives, encouraging us to reach farther than we might have without them. Perhaps even becoming heroes to the next generation.

I was fortunate to grow up in the '60s, when heroes were plentiful. Like many, I favored the entertainment side: James Bond, The Beatles, The Monkees and *The Twilight Zone* were among my favorites.

I'm also fortunate because this era is remarkably well preserved. If I wish to relive the thrill of Sean Connery as Agent 007, I merely pop *Dr. No* or *Thunderball* into my VCR. If I suddenly get the urge to hear a non-scratchy version of "I Want to Hold Your Hand," I know I can walk into any music store and buy a brand-new copy of The Beatles' classic. These items are well over 25 years old, yet still available to all who are interested.

Some aren't so lucky.

If your generation developed heroes in the '80s, hold on tight or risk losing them forever. We live in a disposable society, where items of interest are literally here today and gone tomorrow. While babyboomers wax nostalgic about times past, they quickly dismiss the heroes of a new generation — heroes that they, in fact, helped create.

So it's not surprising that my inspiration for this story came from a 15-year-old computer user. He had responded to a "mouse for sale" advertisement I posted on a local BBS. While I dug through a filing cabinet for the documentation, he perused my disk library, built from seven years of reckless consumerism and software reviewing.

"You have a lot of weird stuff here," he muttered, flipping through rows of floppies. "I've never heard of half of these."

I smiled and kept on digging. He was probably in the British section, I thought, which did have some odd, obscure titles.

"What's this *Blue Max* like?" he asked, quite innocently.

With that I stopped cold. "You're joking, right?" I said, but could see that he wasn't.

Taking a break from our mousecapades, I whipped Bob Polin's WWI classic into the disk drive and began the countdown. "This was my first 64 game," I boasted. As the game loaded, I continued listing my initial software purchases: *Lode Runner*, *Beach-Head* and *Jumpman*, The kid looked at me like I was speaking Latin. None of these titles rang a bell.

When *Blue Max* finally arrived, I proudly gave the nickel tour, and noticed I was a bit rusty under the wings. "Wow!" he cried, "That's pretty cool!" After a few daring moments of strafing and bombing, I achieved flame-out. "Do they still have this in the stores?" he finally asked.

"No," I chuckled, "I don't think so. This game is six years old. You might be able to find it mail order, but don't count on it."

It suddenly struck me that this kid, obviously new to computer gaming, will never be able to enjoy the simple pleasures of a game like *Blue Max*. Only six years old and it's already unavailable, at any price. It didn't seem fair.

The more I thought about it, the more game titles came to mind. Here we are about to toast the 1980's — a decade of tremendous historical value to the home software industry — without even a second thought to the fabulous entertainment we've enjoyed through the years. That didn't seem fair, either.

The Search Begins

What seemed easy, as an idea bouncing around my head, quickly proved to be a monumental task. The genealogical history of the entertainment software industry is a tree with many diverse branches. To compile and evaluate a comprehensive list of every computer game published for the 64 would be fascinating, but far too bulky for these pages.

Instead, I opted to oversimplify, breaking the games down into generic categories. Even then, spatial limitations forced me to be choosey about which games could be included. Entire genres had to be dropped, such as fantasy role-playing, sports, war games and flight simulators. Some are too numerous, too similar, or simply too new to be considered vintage games. No doubt there will be many favorites left out. For this I apologize — they are here in spirit.

Most of the categories reflect an arcade

SOFTWARE NOSTALGIA

by Scott A. May

heritage. Early software designers were masters of the "coin-op clone" — hasty variations on an arcade theme. As these designers matured, creativity blossomed and home software soon out-performed its arcade origins.

There are many points of interest as you wander this software museum. Hardcore fans will begin to cross-reference game styles and designers' names (which I've tried to include whenever possible). You'll also notice the great "software cycle": game styles that were once popular on computers are now in vogue with Nintendo and Sega videogame players.

Not everything, of course, withstands the tests of time. Games once thought to be innovative now seem a little silly. True classics, however, shine brightly no matter how dusty.

Ratings are arbitrary, based on the standard five-star system:

★ — poor
★★ — fair
★★★ — good
★★★★ — above average
★★★★★ — excellent

Whether you're a veteran player or a new recruit, I hope you enjoy this blast from a glorious past.

A Return to the Salad Days

In 1972, *Pong* stood vanguard on the battlefield of electronic entertainment. Although widely considered the great-grandfather of modern computer games, it merely served as an omen of greater things to come.

Another six years would pass until a Japanese company named Taito carefully altered the basic *Pong* and *Breakout* formats, creating a worldwide obsession known as *Space Invaders*. The game prompted the flow of millions of quarters and signaled the birth of the arcade industry as we now know it.

The addictive nature of the game also stirred its share of criticism. Parents thought it was a waste of time and money. Educators were convinced the game was turning youth into an army of brainless idiots. Even the medical community voiced concern about the affects of CRT exposure and "*Space Invaders* Wrist."

In the end, it was the players who decided that if they're going to be suffering from unknown maladies, they might as well be doing it at home. When the Atari Corporation licensed *Space Invaders* for the company's fledgling VCS 2600 (Video Computer System), the home videogame market took off like a comet.

Eventually the boom turned to bust as the market became saturated. Game players soon tired of the limits of tiny videogame players. They turned their attention — and pocketbooks — to the new generation of home computers. The stage was set for the most incredible game machine of its time: the Commodore 64.

In its formative years, most of the original titles for the 64 were either holdovers from the videogame era or clever duplicates. In the early days of the 64, small independent software developers sprang up like mushrooms after a warm rain. (This same phenomenon is now being repeated for the Amiga.) Most of these companies were host to rogue programmers boasting high creativity and a slightly bent sense of humor. It was the beginning of the 64's salad days.

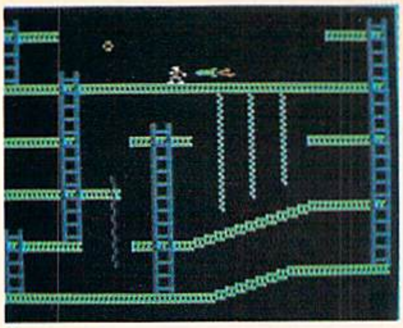
It Came from Outer Space

No other gaming style has spawned more clones than *Space Invaders*. Known in the trade as "slide 'n' shoot" contests, the formula is simple: One or two players move a firing mechanism (spaceship, laser embankment, etc.) horizontally across the bottom of the playfield. Meanwhile, enemy forces advance from the top of the screen. Your job is to scoot around blasting the enemy while avoiding their return fire. Obstacles were often placed between you and the enemy to provide protection and inhibit firing. *Space Invaders* left the door wide open for many creative modifications.

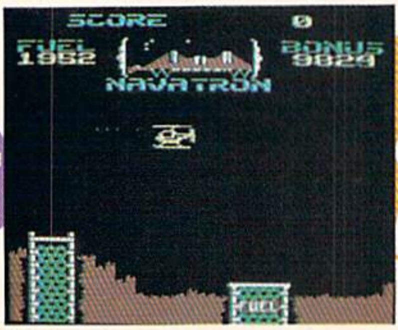
★★★ *Bandits* — 1983, Sirius Software. Designed by one of the true unsung heroes of the 64, Tony Ngo (later of Activision, now rumored to be with Nintendo). Ngo's designs typified the Sirius not-so-serious approach to computer games. In this fast-paced, tongue-in-cheek arcade contest, players battle hordes of scurvy-conscious aliens intent on stealing your supply of assorted fruits. Beyond the silly premise, however, lies an absolutely diabolical game. Players patrol the bottom of the screen as wave after wave of aliens tumbled, spun and bounced from the top. Ngo's trademark graphics — dense, detailed and colorful — fluid animation and frenzied play action are still delightfully crazy after all these years.

★★ *Crossfire* — 1983, Sierra On-Line. This tough little game quickly separated the wimps from the winners. Designer Jay Sullivan took the basic *Space Invaders* scenario and wrapped it around three sides of the screen, leaving players — as the name implies — in the crossfire. Minimal graphics and a driving soundtrack ("Peter Gunn") accentuate the incredibly difficult play action. Jeff Minter would later take this same game design to bizarre new heights (*Gridrunner*.)

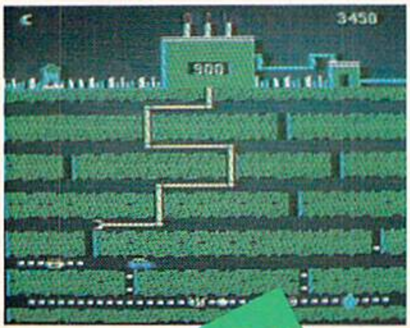
★★★ *Wavy Navy* — 1983, Sirius Soft-



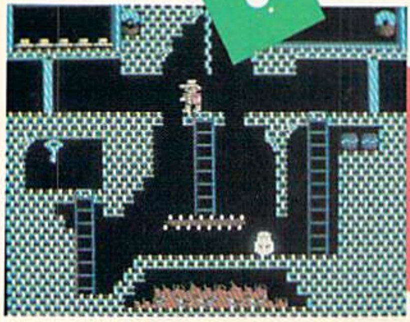
Jumpman



Fort Apocalypse



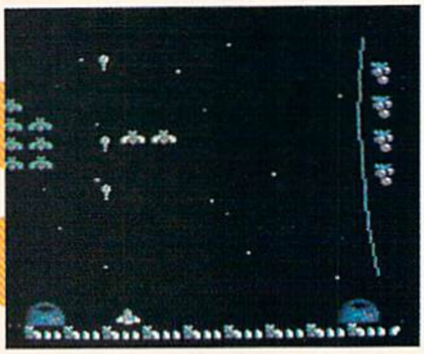
Oil's Well



Montezuma's Revenge



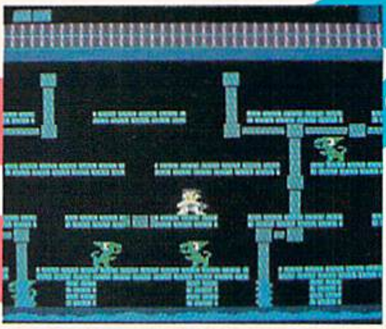
Omega Race



Bandits



Hard Hat Mack



Trolls and Tribulations

ware. Another Tony Ngo design, this game featured yet another subtle twist on the slide 'n' shoot formula. Commanding a deep sea gunboat, players blast away at rows of targets while rolling atop waves at the bottom of the screen. The aggressive enemy hit from above (jets, bombers, helicopters) and below (floating mines, submarines). Once again, Ngo's amazing graphics and sound effects elevated a mediocre game design to classic status.

★★ *Save New York* — 1983, Creative Software. What sounds like an immense moral dilemma is actually a pretty straight-laced shoot-'em-up. Designed by Joe Jetson (*Writer's Choice*), players defend the Big Apple from alien birds of prey who enjoy munching on skyscrapers. Blast them before they reduce the city skyline to rubble. As an added twist, the creatures also lay eggs, which hatch and invade the subway system. Track them down with your trusty pistol. Inventive fun for the younger set.

★★★★ *Forbidden Forest* — 1983, Cosmi. Just because you act like a clone doesn't mean you have to look like one. In one of his first projects, veteran designer Paul Norman (*Super Huey*) created a genuine collector's item. placing simple slide 'n' shoot play mechanics within a multilevel adventure setting. In the game, players stroll through the forest armed only with a bow and arrows. As night falls, wave after wave of creatures attack: killer bees, frogs, skeletons, dragons, and a giant cyclops. Norman's creative use of time and space add punch to the proceedings. This game was also famous for its grisly graphics (players die a savage, bloody death) — definitely not for weak stomachs. The game's soundtrack still ranks among the best ever created for the 64.

★ *Moon Shuttle* — 1983, Datasoft. This arcade translation featured two clones in one package — navigate the asteroid field and shoot the bobbing aliens — neither of which proved to be very interesting.

★★ *River Raid* — 1984, Activision. Re-released for home computers following a successful run on videogame systems, Carol Shaw's classic wears a bit thin when viewed today. Players pilot a fighter craft upstream, blasting enemy units to smithereens while avoiding collisions. The challenge was to fire, refuel and navigate the sometimes treacherous river channels all at the same time. Notable today mostly as a high point in Activision's videogame glory years.

★★ *Gyruss* — 1984, Parker Bros. *Space Invaders* in the round, or, circle 'n' shoot. A faithful translation of the popular coin-op. Players defend the outer edges of the screen from aliens that swarm from the center. Fast-paced fun, but overly repetitive.

Isn't It Amazing

In 1981, just when the *Space Invaders* frenzy was beginning to wear itself out, along came *Pac-Man*. Original, easy to learn and instantly likeable, it became the most popular coin-op game in the history of the arcades. Found everywhere from gas stations to pizza parlors, there was no escape from the dot-gobbling yellow ball and his ghostly friends.

When Atarisoft introduced the *Pac-Man* home version — one of the few translations the now-defunct company proved adept at — consumers went wild. Game designers also scrambled to cash in on the craze. The results ranged from outright rip-offs (usually European in origin) to inspired variations on the maze chase theme.

★ *Radar Rat Race* — 1982, Commodore Business Machines. Run for cover when you mention this infamous title to veteran 64 owners. Looking back, from a safe distance, this cat-and-rat maze game wasn't THAT bad. Players guide their rodents through a large vertical maze in

search of cheese, while avoiding nasty felines. Expert programming provided lightning-fast action and a tough computer opponent. But the primitive graphics, monotonous gameplay and insidious soundtrack — "Three Blind Mice" played at 2,000 rpm — sent most players screaming from the room. File this cheesy number under Computer Games From Hell.

★★★ *Serpentine* — 1982, Broderbund. Although a long way from *Pac-Man*, this exciting maze chase game takes its gobbling seriously. One or two players twist and turn their slithering snakes within a convoluted maze, nipping at each other's tail until nothing's left. Strategy and quick reflexes blend perfectly in this smoothly animated game. Inspired by the classic videogame *Snafu*.

★★★ *Mr. T.N.T.* — 1983, H.E.S. In this addicting multilevel sleeper, designed by Harley Puthuff, players race a handful of deadly sparks along an intricate maze of fuses. As both sides advance, their paths disappear. The goal is to trap your opponent on a dead end fuse. Colorful, ornate screens highlight this challenging game, which owes more than a passing nod to the coin-ops *Qix* and *Amidar*.

★★★★★ *Oil's Well* — 1983, Sierra On-Line. The Roto Rooter® of computer games, and a clear case of the student outshining its mentor. With only a few — albeit innovative — changes in design, Thomas Mitchell took the shopworn premise of *Pac-Man* and created one of the all-time best home arcade games. Working from ground level on a cross-section screen, players lower a flexible, retractable drill into the depths of a maze-ridden oil well. As the drill bit munches frantically to clear the maze of oil pellets, it leaves a trail of pipe behind. Meanwhile, nasty underground creatures ("Oozies") enter the horizontal shafts from each side. Although the creatures are no match for the drill, any contact with the pipe severs your lifeline. Eight levels of frantic action await unsuspecting wildcatters. Truly in a class of its own, *Oil's Well* even inspired its own clones, including Datamost's *Aardy the Aardvark* and Datasoft's *O'Reilly's Mine*

★★★ *Zengi* — 1984, Activision. A curious example of video cross-breeding, *Zengi* evolved from Carol Shaw's classic videogame *Happy Trails*, which in turn was taken from a nearly unknown arcade game called *Locomotion*. The source of all this inspiration — believe it or not — were those cheap plastic sliding tile puzzles, a familiar toy for kids. In Matthew Hubbard's *Zengi*, however, instead of sliding pieces of the puzzle around, players move about a disjointed maze, rotating tiles to form an unbroken path. Enemies also travel the path, disrupting progress or costing you a life. Although the mystic significance was lost on most players, there's no denying the game was relaxing, even hypnotic. The soothing New Age soundtrack also helped considerably. A real curio.

★★★★ *Mr. Do!* — 1984, Datasoft. Expert programming by Troy Lyndon (*Star Rank Boxing*) highlights this colorful coin-op translation. One of several excellent make-your-own-maze games from the *Dig Dug* sub-genre (which includes First Star's classic *Boulder Dash*). One or two players race the clownish hero through a series of increasingly difficult screens, chomping apples, eating power pills and avoiding party crashers. Single-minded fun, bolstered by near-perfect graphics, animation and arcade soundtrack.

We've Got You Surrounded

When the *Space Invaders* phenomenon proved legitimate, designers nearly fell over themselves in mad rush to the arcades. Among the most interesting was *Asteroids*. An immediate hit, the game produced a dedicated following and proved

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The Broderbund Six

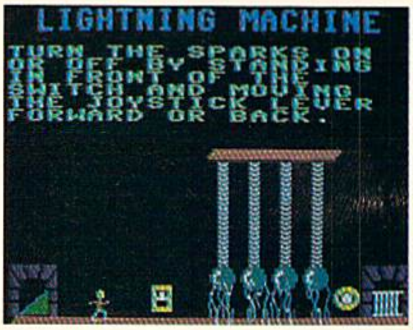
Like any artistic endeavor, most software companies experience periods of creative highs and lows. These often come in cycles, spurred by events consumers rarely think about: changes in management, shifts in marketing strategies, hot and cold business transactions.

Like fine wine or vintage automobiles, there are special times in the life of a manufacturer when all the ingredients seem to blend together perfectly. If you glance at the dates throughout this story, you'll notice that 1984 was a prolific year for most software companies. At Broderbund Software, it was exceptional.

In 1984, Broderbund released — one after another — six of the finest computer games made for the 64. Everything clicked but the timing. Fed up with fifth-generation arcade clones, players flocked to sophisticated graphic/text adventures and fantasy role-playing games. Despite bold, original storylines and expert programming, the action-oriented "Broderbund Six" played to a much smaller audience than expected. Who said life was fair?

Looking back, we can forget sluggish sales and marketing trends, to view these games as they really were — six unsung classics of an extraordinary era.

★★★★★ *Raid on Bungeling Bay* — You'll have to look long and hard to find a tougher arcade challenge. Players pilot a carrier-based helicopter adrift in the seas of the Bungeling Empire (of *Lode Runner* fame). Your mission is to halt production of the Bungeling war machine by bombing its factories, located on various islands within this huge environment. Each successive factory is more difficult to destroy, complicated even further by an aggressive Bungeling defense, including fighters, bombers, tanks, gun turrets and



Castles of Dr. Creep

heat-seeking missiles. Will Wright's (*Sim City*) design couldn't be better — beautiful graphics, a smooth 360-degree scrolling playfield, superb sound effects and a computer opponent that simply won't quit. Relentless, punishing action make this a must-have for true arcade buffs.

★★★★★ *The Castles of Doctor Creep* — Without a doubt one of the most creative, mind-boggling action games ever made for home computers. Designed by Ed Hobbs, this running/climbing, puzzle-solving tour de force has a deceptively simple concept: Enter one of 13 different castles, find the exit and leave. The things you encounter between Point A and Point B, however, are the stuff nightmares are made of. Obstacles include lightning machines, force fields, moving sidewalks, ray guns, matter transmitters, trapdoors, mummies and Frankensteins. An overhead map plots your course through the game's 200 interconnected rooms. Features one- or two-player cooperative modes, as well as a unique interactive on-disk tutorial. Graphics, animation and sound effects are all top-notch.

★★★★★ *Spelunker* — For those who like their ropes 'n' ladder games big, fast and challenging, this one's for you. Play-

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changes to existing commands. A very nice in-depth explanation is given of the 1.3 Resident command. This is one of those commands that Commodore has not documented very well and one that most users of 1.3 seem to have a hard time understanding.

Chapter 11, entitled *Software in the Public Domain,* is really much more. It explains the quite confusing difference between Public Domain software and (as Rob calls it) Not-So-Free software. This is one area most new computer and modem users seem to have the hardest part understanding but is important to be fully understood. Also covered is the importance of modems and BBS's to the Public Domain software world with a list of the best non-commercial terminal programs available. Other items covered include archive utilities, damaged disks, viewing pictures, startup-sequence shortcuts, and much more.

Chapter 12 is titled *Amiga Answers* and consists of several pages set up in a question and answer fashion. These questions are the most frequently asked by Amiga users. Questions range from the differences between the Amiga 500, 1000, and 2000 to printers, viruses, custom chips, genlocks, and hard drives (just to mention a few). This chapter will be most useful to those new to the Amiga who need a clear explanation of those often heard Amiga terms and buzz words.

The appendix contains several reference items including; an AmigaDOS command reference section based on the 1.3 commands, a listing of the AmigaDOS error codes with an explanation for each with possible solutions, a listing of Amiga users groups, and finally, a detailed listing of the commands for the Commodore supplied editor, ED.

As you can see the book has a little something for everyone, whether they're new to the Amiga or someone who simply wants to know how to get more out of their system. Of course, like any book, this book is not for everyone. If you're a GURU then you already know the things covered in this book. But if you're one of the many who desires to become a GURU, this book is on the list of required reading.

Editor's Note: The Second Edition of The Amiga Companion *has just been released. New information includes a chapter on hard drives, a* MicroEMACS *appendix and in-depth coverage of the Shell command.*

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hop on your horse and ride—again and again and again.

This brings up the only aspect of *Hillsfar* that bothered me: in order to save your game, you must ride back to Camp. And if you've ventured far from Hillsfar, that can mean several lengthy horse-riding sequences, which, despite a variety of special events, grow tiresome after awhile. The necessity of traveling so far every time you want to save your progress is also a handicap for novice players.

Even so, *Hillsfar* is a quest recommended for those who possess rudimentary joystick skills or are willing to practice. You can even practice missile weapons skills in the action sequence at Tanna's Target Range, where you might win gold as well as enhance your weapon skills. An AD&D character who has improved certain skills and attributes as a result of his or her *Hillsfar* experiences can be transferred back into *Pool* or *Azure Bonds.* Because they cannot advance up through the levels in this game, I don't recommend playing it just to build up your characters. (Only one at a time can play, but several games in progress can be saved on the same disk, so your entire *Pool* party can visit the town.) It's aimed at the novice or beginning adventurer, but because the games' puzzles require little brain-work, hard-core Kobold-killers (such as myself) who are out for some fast action and thrills may find *Hillsfar* an invigorating change of pace. And with so many different quests for the four classes, it provides exceptionally high replay value.

The Last Ninja 2: Look Out, NYC!

I wasn't as moved by this sequel as by *Hillsfar,* mainly because *The Last Ninja 2,* like the original, won't let you save a game in progress. That means you've got to slug your way through the entire seven levels in one sitting, which is unfair when you consider that the upcoming IBM conversion will support a save option.

But if you're a *Ninja* fan intrigued with the notion of waging martial arts warfare in midtown Manhattan, this combat-intensive game blends in enough puzzles to keep you on your toes while your opponent is kicking you with his. As you struggle against the evil Samurai Armakuni, his henchmen and the corrupt NYC cops, you'll also be rounding up an assortment of objects. Their functions must be figured out in order to fight your way to the ultimate confrontation with the Warlord who slew the rest of the Ninjas in your Brotherhood back in China.

An oblique-angle view similar to the one in *Hillsfar* but covering a bigger portion of the screen, is employed, and here you can walk into the scene's background. But *Ninja 2* still suffers from the original's awkward interface, which makes it tricky to line your character up when he needs to grab an item or fight the enemy. If you can put up with this and the lack of a save feature, *Last Ninja 2* certainly has the thrills and spills all action adventurers seek.

The Great Underground Empire Heads West

Just as I was slaying my 327th Orc in *Hillsfar,* I heard Mediagenic was shutting down Infocom's Cambridge, Massachusetts office and shipping the entire company to Silicon Valley. A phone call to Joe Ybarra (formerly with Electronic Arts, where he produced *Bard's Tale* and other RPG's, and now vice-president of entertainment software for Mediagenic) confirmed the rumor.

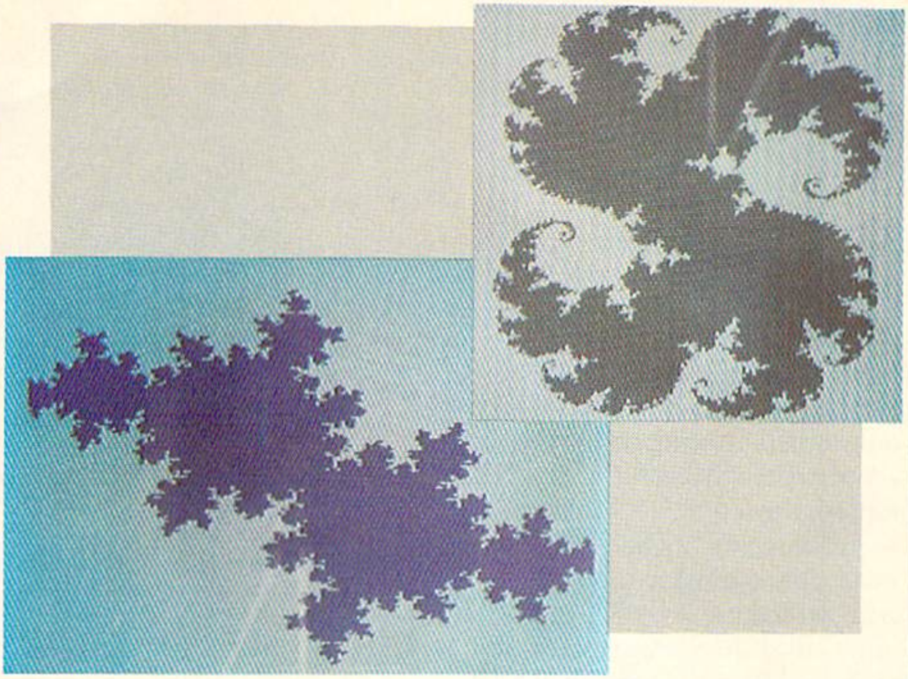
The move is mainly a business decision brought on by the current slump in the games industry and the additional overhead of maintaining an east coast office for Infocom at a time when more of their game development is being done on the west coast. Unfortunately, none of the "old guard" such as Steve Meretzky *(Planetfall, Zork Zero),* Dave Lebling *(Zork III, Lurking Horror)* and Stu Galley *(The Witness),* will accompany the Infocom mainframes to Sunnyvale, for they apparently turned down the chance in order to remain on the east coast. They still might turn out some games, though. Marc Blank, whose most recent Infocom game is *Journey,* a "role-playing chronicle" for the Amiga, is currently working on a project for Infocom, and Elizabeth Langosey, who has contributed to previous Infocom games, is doing something along these lines (neither is working in-house, however).

According to Robert Sears, Infocom's new general manager, we can expect to see new directions for Infocom adventuring—look for more role-playing games and the introduction of "interactive graphics" like those used in ICOM's *Deja Vu* and *Shadowkeep* adventures. Westwood, who did *BattleTech* for Infocom, will develop more of Infocom's RPG's, and we'll still see "type in the words" parser-based adventures for fans of the traditional Infocom style—with plenty of innovations in these, too.

by John Iovine

Julia Sets

for the Commodore 128



This article will deal with a close relative of the Mandelbrot Set called the Julia Set. For more information see previous articles in *Commodore Magazine* issues and on Chaotic equations and Mandelbrot sets. Fractal equations are a fasinating science. The images they are capable of producing are visually addictive.

Complex Numbers

As with the Mandelbrot set, Julia also uses complex numbers. In fact the programs are almost identical. The difference between the two programs is this: With the Mandelbrot set we plotted values of x and y at specific points and recorded the results in the (p,q) plane. With the Julia set we consider the (x,y) plane at fixed values of p and q.

The process for both is:

$Z = Z \uparrow 2 + C$

Where z and c are complex numbers. In order to do mathematical operations, we break down each complex number into its real and imaginary parts, thus:

$Z = x + iy, C = p + iq$

The i placed before the y and q denote the imaginary part of the complex number (for more information on complex numbers see previous article on Mandelbrot Sets).

In order for you to see the subtle differences in the programs, I have included a simple Mandelbrot program also for you to compare to the Julia program.

Desperately Seeking Julia

Julia sets are so named after the French mathematician Gaston Julia. Gaston Julia and Pierre Fatou studied the properties of these dynamic equations around World War I. The notion of the self-similarity of these boundries was known to these mathematicians who stated that the entire boundary could be regenerated from a small piece using an iterative process.

Again it is only with the advent of computerized graphics that the nature of these ideas and equations can be appreciated. By choosing a point on the Mandelbrot set we can plot the corresponding Julia set. It is in the boundary region of Mandelbrot that we obtain the most interesting pictures of Julia. (Note this is also true for the Mandelbrot Set)

Inside the Mandelbrot set the corresponding Julia set is a connected solid. As we cross the boundary of the Mandelbrot Set the Julia set becomes disconnected. If we continue further Julia disingerates into dust.

Program Operation

The program first querries you for the screen boundries XL and YT. Values for these parameters are between one and three. The larger the number you choose here, the smaller the Julia set will be drawn.

Next the program requests values for P and Q. These two values make up the complex number C. Herein lies the difference between the Mandelbrot and Julia programs. Notice in the Mandelbrot program the values of P and Q change with with each new point that is plotted, while in the Julia program these values remain constant.

One major complaint I heard concerning the Mandelbrot program from the last article was the time required to plot the Mandelbrot sets. Well, the simple Mandelbrot program will plot the sets in approximate 1/4 of the time required of the original. The Julia program employs the same tecnique plus another one and reduces the time require to about 1/8 of what it would be normally. We accomplish this time reduction by reducing our screen size to one quarter of the standard screen.

In addition, since the Julia program plots sets that are symetrical We can mirror one side for the other and reduce our plotting time by another 50%.

The 128 computer has a fast and slow mode that we utilize. Pressing "F" while the program is running, will put the computer in the "Fast" mode. Naturally the fast mode blanks the graphic screen so when you wish to check the progress of the drawing, press the "S" key to go back to slow mode. Well, there isn't too much more I can do to reduce the time required except go to ML subroutines which I won't do unless there is a strong request for me to do so.

Exploring The Julia Set

How do you explore? Pretty easy actually. The mandelbrot set shows the horizontal coordinates of x from -2.25 to .75 and the vertical y from 1.5 to -1.5 . Pick a point on the mandelbrot set you want to look at, (perferrably a boundary point) and estimate the points x and y coordinates. Plug those numbers into P and Q when you run the Julia program. You can use 1.5 for the screen coordinates of both XL and YT.

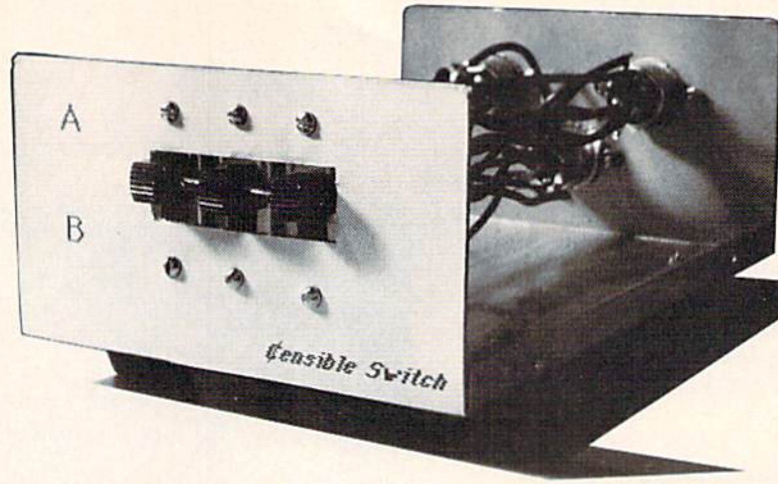
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by Michael J. Behr

The Switchable Alternative

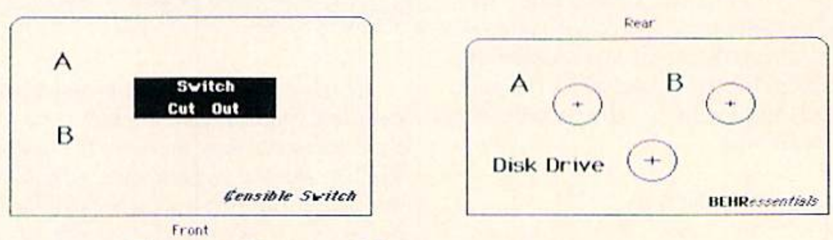
for the Commodore 64 and 128

If you have two printers and haven't yet purchased an A-B switch, this may be the sensible alternative. Costing about the same as an extra cable (approximately $10.00) this switch box will provide low-cost insurance against a malfunctioning interface and allow maximum printer flexibility through individual DIP switch settings.



MICHAEL J. BEHR

This close-up shows the three DPDT slide switches. To throw all three switches at one time, a hole was drilled through the slides. Using the drill bit as a pin-measuring was eliminated.



These face plates were drawn using "geoPaint." Then printed on a self stick "Avery" type label.

I purchased the Commodore 128, *Fleet System 4* and the Star Power Type printer, to be used mainly for business correspondence, as I operate a small service company specializing in the repair and maintenance of photofinishing equipment. This equipment is used by photo labs to turn your rolls of film into memories that will last forever. I also entered the realm of freelance writing with about twelve published articles under my belt. This computer package was perfect, providing the flexibility needed to process words

Just as the ancient mariners couldn't see the armada waiting over the horizon, I couldn't see the pixels and sprites looming in the world called graphics. As the haze cleared, with the help of GEOS/*geoPaint,* I ordered a Star NX-10.

Not having much money (nor a wife who understands this stuff) I switched a Super Graphix Jr. between the two printers. This became a pain in the neck, as the interface was seldom connected to the printer I wanted to use. I'm sure Murphy has a law to cover this. There was also a fear of dropping the interface and breaking it, or wearing out the connectors. Looking into A-B switches, the least expensive I found was $19.95. I would also needed two cables at $9.95 each, bringing the total to approximately $40.00, which was more than I cared to spend for a totally passive device.

Evey time I changed printers I realized a switch was a necessity. Then I saw an ad listing my interface for $19.95. Electrical energy began bridging my synapses at an incredible rate. This was the solution to my A-B problem. Two interfaces meant no more risk in switching back and forth. It would also provided security in the unlikely event that a device failed, as I would have a back-up, and for about the same price as the A-B switch. It also allowed flexibility by customizing each interface to maximize printer capabilities, whereas before I used the same DIP switch settings for both machines.

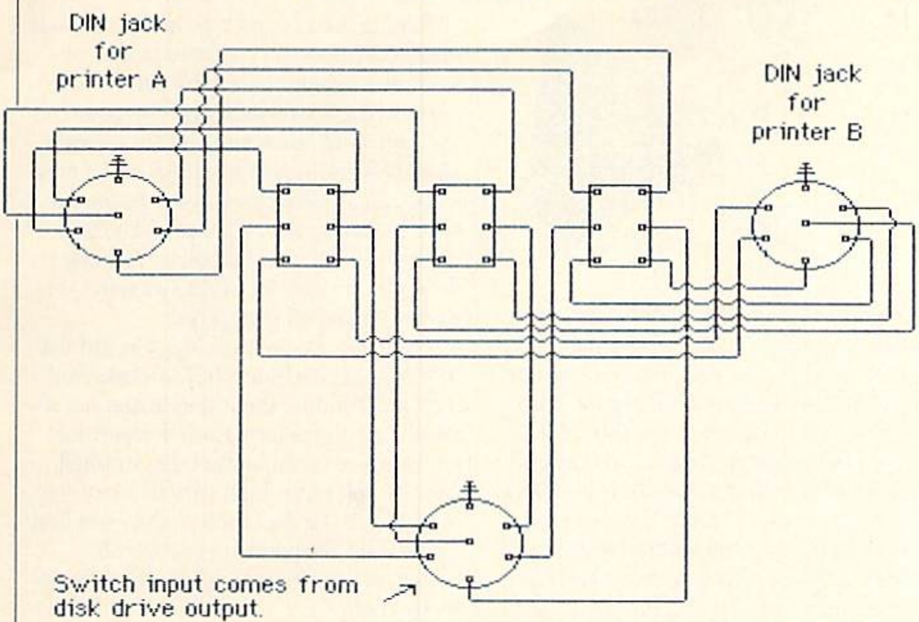
It was really nice not to swap the box anymore, now I had to swap the plugs. It was inevitable, an A-B switch would still be needed. At this point I decided to construct my own. Using a small project box, three six-pin DIN jacks, two six-pin DIN plugs, 18″ of six conductor wire, a few feet of single conductor wire and #2-56 * 1/4 fasteners. The fellow at the electronics shop, where I purchased the parts, suggested that I use shielded wire. Since I did not have any, I used what was on hand and have experienced no problems.

The hardest part was finding a switch that could handle the six inputs and twelve outputs (six to each printer). The only thing I found was a rotary type that met military specs, and cost $12.00. That is when I decided on using three double-pole, double-throw slide switches. You could use two triple-pole, double-throw type, however they are harder to find and more expensive.

When putting the switch together I wanted to be able to throw all three switches at the same time. To accomplish this I drilled a hole through each slide and connected then with a steel pin. (See photo of front panel.) To make finding the right sized pin easy (and eliminate measuring), the drill bit was sacrificed after its boring job.

To mark the mounting holes I drew the front and back face plates using *geoPaint* and printed then on Avery-type labels. The labels were trimmed to fit the plate then stuck in place. Using a punch the holes were marked and then drilled. The front plate was the hardest, as a rectangular hole had to be nibbled out. Doing less than a perfect job, another label was used to help hide the imperfections. After mounting the switches and jacks, I began wiring one pin at a time going clockwise

¢ensible Switch Schematic



The printer signal enters the switch from the disk drive through the center DIN jack. It then travels to the center row of pins on the DPOT switches, represented by the rectangles above. When the switch is in the up position the printer information is sent to the jack for the A printer. The B jack receives the signal when the switch is down.

around the DIN's and from left to right on the center row of the switch inputs. The top row of switch outputs went to the A side jack and the bottom row to the B side. Looking at the schematic you will see that each pin on the plug marked "from disk drive" goes to a center pole of a switch. From here the top pole would go to the corresponding pin of jack "A," and the bottom pole would connect to the same pin on jack "B." To connect the disk drive to the switch box a cable was constructed using six conductor wire and two DIN plugs.

The interface needed power to operate and the Super Graphix Jr. gets it from the cassette port behind the computer. Jr.'s power connector is designed to accommodate another connector piggy back, allowing both interfaces to be connected at one time and eliminating the need to cut, splice or solder. ■

Parts List

Qty	*Item*	*Part #*	*Source*
1	Project Box		
3	six-pin jack	Model J6D	Vanco Inc.
2	six-pin plug	Model P6D	Vanco Inc.
3	DPDT slide switch	RS#275-403	Radio Shack

Approximately 7' single conductor wire
Approximately 2' six conductor wire

Interacting with GeoPublish

Continued from page 32

bum, resetting the bitmaps, etc.)

Me oh my, this one page has taken over 16 hours to produce. And I'm very familiar with the program. And I have an REU. Of course, it's worth it to me because this little baby is going to be in a couple hundred thousand magazines. But for the average user, is this really practical? You bet it is. For one thing, the average user isn't going to produce an entire comic strip each time; he'll probably use clip-art if needs special graphics. But even if he did, it'd still be worth it. In my opinion, any time a person wants to fancy up a page with columns and fonts and maybe a graphic or two, that very desire makes *geoPublish*ing well worth an evening or two of effort.

I really need to make it clear in my column that *geoPublish* is truly a powerful, glorious program. Of course, if I say it like that, readers will think I'm just using a bunch of hyperbole . . . but it's the truth. I guess I'll just have to get the old creative juices flowing and figure out a way to tell them that will make them believe me. But I can worry about that Later when I write the main article. Something will come to mind. ■

by Robert W. Baker

Club Caribe and PC-Link Email

Explore the inner workings of the Q-Link telecommunications service with network pro Bob Baker.

If you enjoy chatting with other online users or playing interactive games, then get ready for your greatest wish come true. The revolutionary "Habitat" graphics technology, developed jointly by Lucasfilm and Quantum Computer Services, has finally been released. Welcome to Club Caribe, the all new animated "super-chat" in which users "see" and "talk" to each other as they explore a unique simulated vacation resort.

The Lucasfilm Habitat technology was originally pilot-tested on Q-Link in early 1988. The playtester responses to the "Habitat" experience were highly favorable, and individual log-in time was often very high. Based on that test, Lucasfilm and Quantum determined that the technical demands of a full-scale roll-out of "Lucasfilm's Habitat" necessitated modifications to the system. Consequently, while Lucasfilm's Habitat has not yet been made generally available in the United States, the technology has been adapted for use in Club Caribe.

"Club Caribe is much more than just another game or chat service. By merging the two technologies, we've created an after-hours fantasy world in which real people share experiences, make friends and enjoy resort life on a day-to-day, month-to-month basis," says Steve Case, Executive Vice President of Quantum.

Unlike existing chat services and multi-player games, Club Caribe users create their own unique animated characters from an assortment of heads, clothing and physical attributes. From the moment you sign on, you cease to exist as only words on a screen. You become a guest of Club Caribe and can custom-tailor your image. A joystick is then used to control your character as you interact with the animated characters of other Caribe users from around the country. You'll be able to "see" and move around the fantasy world as well as communicate with other guests.



LINDA CLARK

Guests talk to each other by typing comments which appear above their characters' heads in a speech balloon, similar to a comic strip. By controlling the movements of your character, you'll be able to enjoy lifelike resort events, such as getting married in the island chapel, competing in an arcade game, or shopping for Caribe supplies in the online shopping district. Relax on the luxurious beaches (including a nude beach), have a drink at one of the friendly pubs, visit the exotic fish in the Aquarium, and much more!

You can roam throughout Club Caribe in two different forms, as a Guest or as a Spectator. In Guest mode you are fully visible and may walk, talk, perform actions and more. As you travel around the island you move through areas or regions that are like rooms in a building. Each region can handle up to six guests at a time. If you try to walk into a region that already has six guests, there will be a brief message indicating the way is blocked. To continue in that direction you can switch to the Spectator mode and try again. When you're in Spectator mode, your character does not appear on the screen and is not affected by the limits within each region. Instead of a character, Spectators appear on screen as an "eye" in the upper corner of the screen. While a Spectator, you can move into any region but you cannot talk or perform any actions. There are no limits to the number of Spectators who can be in the same region, so this mode will be useful for attending game shows, watching tournaments and other group activities.

You'll most likely be using the Guest mode most of the time, after all, this is what the Habitat environment is all about. Your on-screen character has the ability to wave, point, jump, bend, punch, face forward and backwards, and even extend his hand. Combined with the ability to talk to other guests, these actions can greatly enhance the fantasy world experience once you get the hang of things.

Talking is easy, just type away and your messages appear in a colored "word balloon" above your character's head. Each guest in the region will have a unique color-coded word balloon so you can quickly identify who's saying what. All of the messages can be seen by everyone in the region, including the Spectators. The only problem is that you cannot scroll back through the older text that's already moved up and off your screen.

If you get tired of walking, you can use the Teleport machines that can take you from one point on the island to another almost instantaneously. Each Teleport has an address or destination code, so you'll want to get a list of the various locations in the Club Caribe Library when you first log on. The Teleports are free for all Guests to use, but you need a token to activate them.

There is no money in Club Caribe; tokens are used instead to perform various business transactions. They're used to purchase items from Vendos, to activate Teleports, or even for special events within Club Caribe. As an active Guest of Club Caribe you're given an ATM Account with a beginning balance of ten tokens. You also have one token in your pocket and get another token added to your account every day you enter Club Caribe.

Instead of having different denomination tokens, each token can increase or decrease in value. You can easily find the current value of any token, and even make change when you only need a lesser amount. You can also make deposits and withdrawals to your account at the various Automatic Teller Machines (ATMs) located near the shops.

You'll generally use the tokens to purchase various items from the Vendo machines that can each offer up to ten different items. One of your first purchases should be a container, since your pockets can only hold a total of five objects at any one time. A container extends your carrying abilities several times over, since each bag can hold up to five objects and each box can hold up to ten objects. By purchasing several containers you can extend your carrying power by placing other items in a container before putting that container in your pocket.

One important item in your pocket is your paper supply. This is used to access the text editor for sending and receiving mail. The text editor allows full-screen

editing, as well as enhanced graphic characters, with cursor positioning via the joystick. Your mail is limited to 15 lines, with the first line used to indicate who the mail is for. A screen similar to the text editor is used to read Monitors and Plaques you may find on walls or desks throughout Club Caribe. These contain information such as Teleport addresses and daily events.

One of the wonderful things about Club Caribe is that you aren't stuck with the same head style and body colors forever. You can easily change them almost any time you wish! There's a shop on the island where you can purchase spray cans to change your body color, buy a new head, or even change your sex!

There are plenty of other features and capabilities in Club Caribe, but half the fun is exploring and learning on your own or with a group. Also, watch for special events and other activities that will be planned from time to time. Be careful though, Club Caribe can be *very* addictive, and it is a plus service after all.

If you like the online games, you may want to watch for announcements for the online game tournaments that are held about twice each month. The tournaments are held in People Connection, starting in the Auditorium, and generally run from two to three hours. They usually start around 9 p.m., and a different online game is used for each successive tournament. QPONS are given for first and second place winners, generally good for several plus hours.

Back in the May column I discussed the Eaasy Sabre system. Well, "Bob James1" offers this hint for other users of this service. While you're using Eaasy Sabre, the Save function (F3) is restored after you press F7. This allows saving whatever is currently in the text buffer to a sequential file. This is much more convenient than trying to take notes while on-line. Bob uses it to capture all the information available on the itinerary he's working on, then he can study it later off-line. If there's a conflict, it's easy to make changes the next time on-line. Thanks, Bob, for a great hint!

By the way, other relatively new services around the system include the addition of the *Isaac Asimov Magazine* in the Science Fiction and Fantasy area. New software publishers now active online include Lucasfilm Games and New World Computing. Watch for notices in the Customer Service area for other new additions as they're announced!

Email For PC-Link Users . . .

Let's take a little closer look at the Electronic Mail and related services on PC-Link. These functions are accessed with the F5 key from just about any area on the system. The menu items allow you to send instant messages, Email or files, read incoming mail and check your outgoing mail. There are also two entries for identifying or locating someone.

Instant messages can only be transmitted to another user who is currently logged onto the system. These are generally intended for short comments or questions, usually for arranging a meeting in People Connection. Longer text and initial contacts should normally be made using the Email service. After selecting this function, simply enter the receiving party's user-id and the message you wish to send. The message will appear instantly at the receiver's system along with an indication of who sent the message.

Sending Email is just as easy, but the user does not need to be online when the message is sent. The message is queued and can be read whenever its convenient for the receiving party. Plus the same message can be sent to a number of users in one operation, and you can later review the contents and status of any Email you send.

I would highly recommend always using Email to establish initial contact with any other user, even when they are online. Instant messages can interrupt a user's current operation at very inconvenient times. Plus the receiving party may not always be able to answer an instant message right away. So, be polite and use Email first.

When you select the Email function, a form is displayed with slots for the user-id of the receiving party, the message topic and the text of the message. You can actually insert multiple names, separated by commas, if you want the same message sent to more than one user. The standard text editor is used when entering all fields, so you can easily delete blocks, insert and delete, etc. When everything has been entered properly, the SEND button will transmit the message to the system and place it in the receiving party's incoming mail queue.

Sending a file via Email is also very easy. You start out entering the receiving party's user-id, message heading and message text just like sending a standard Email message. However, when you activate the SEND button, you'll be prompted for the filename of the file to be transmitted. Simply enter the name of the file you wish to transmit and press ENTER or activate the appropriate button. A status meter will be displayed to track the progress of the file transfer to the system, just like that used when uploading files to the libraries.

Whenever you have incoming mail waiting to be read, you'll hear a tone when you log onto the system and see a small envelope in the right side of the middle bar in the screen. One of the F5 menu items allows you to see a list of the current messages. You can then select whatever message is desired using the cursor keys and press ENTER to see the message contents. While the message is displayed, you can easily respond to that message without having to enter the user-id or message topic by using the REPLY button. When you're done with one message, the list of incoming mail will be displayed again, and you can choose another message to process. The messages can be handled in any order you choose.

If you select the Read Mail function when you do not have any incoming mail, you'll be able to read old mail. So, if you need to send another message to someone, or forgot to save a copy to disk, you still have access to your older mail after it's been read. However, be careful when trying to leave this area, as there is no Cancel button and you cannot use the ESC key to exit.

The last Email function provides the ability to check your outgoing mail. When first selected, this function displays a list of your previous outgoing mail in reverse chronological order. You can easily select the desired message using the cursor keys, then press ENTER to view the actual text of the message. The SHOW STATUS button will return the date and time the receiving party read the message. So you can quickly tell if someone ever read your message and when it was read.

The last two functions in the F5 menu will both prompt for a user-id when selected. Identify Someone will return the city and state of the user. Locate Someone will indicate what chat area a user is in, if they're online. These functions are generally intended for use within People Connection but may be helpful elsewhere.

One quick word of caution on the use of the file-transfer function. A similar function was available in the early days of Q-Link, though not quite as powerful. However, the Q-Link file transfer was deleted when a number of users started using it to distribute copies of copyrighted software. Hopefully, a word to the wise should be sufficient. ■

by Mark Jordan

A Talk with Loren Lovhaug

This month I'm going to introduce you to a friend of the Commodore 128, Loren Lovhaug (the anglicized pronunciation is simply Love-hog), a 23-year-old Commodore aficionado. Loren hails from the twin cities area of Minnesota from which comes the name of his major contribution to the 128 arena, *Twin Cities 128*, a computer magazine dedicated to the 128. A former law student, Loren is now a full-time 128 supporter with goals loftier than merely publishing a support magazine—a topic we'll get to eventually.

I wanted to do this interview not only to let readers know what's going on in the Commodore 128 world, but also to let you see how a person rises from being one who spends money on his hobby to one who makes money from it. Mr. Lovhaug dispels the notion that the home computer market is no longer open to the small-timer. Loren fits my stereotype of the perfect bootstrap entrepreneur in three crucial ways: 1) his original motive was love, not money; 2) his main investment was an incredible amount of hard work; and 3) he is not afraid to dream. Following is a small portion of a two-and-a-half hour interview with him.

Mark Jordan: Give me the story behind *Twin Cities 128*.

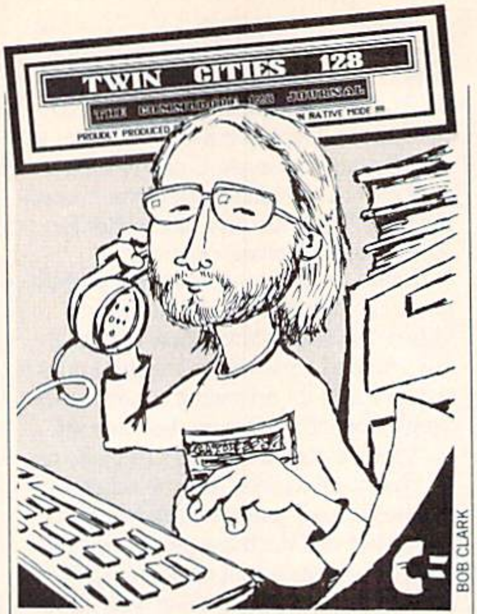
Loren Lovhaug: The background begins when I was a senior in high school. I wanted a computer badly, and my parents saved up and I saved up and we got a VIC 20. By the end of that summer I had 32K, an 80-column card, and everything. I still have it. That was in 1983, the year the 64 came out. Well, eventually I went to college to study law at Hamline University in Minnesota, got married, and got a 64. Then along about January 1985 I started hearing the rumors about the coming Commodore 128. I ate everything up on that.

Jordan: So you're the prototypical Commodore eight -bit user from the VIC to the 64 to the 128?

Lovhaug: I probably was the second or third person in Minnesota to have a 128. I got it in late July 1985.

Jordan: Were you a programmer?

Lovhaug: Oh, I programmed in BASIC and assembly language a little but that



wasn't my main occupation with the computer—I mainly used it for word processing. I had been doing a lot of writing for school and so forth.

Jordan: Did you submit any articles to Commodore-specific magazines?

Lovhaug: Oh, sure. But they seemed to get lost in the shuffle. I kept thinking, I can do this. Meanwhile, I had been thinking that the coverage for the 128 wasn't all that hot. This was also about the time when *INFO* magazine was just starting out, and I figured I could do it as good as those guys from Iowa. So, after some conversations on Q-Link—I was also a prototypical Q-Link user—I said, Well look, we're going to start North America's first C-128 magazine. The first issue came out in January 1986. I took it to a local user's group and it sold out all 30 copies.

Jordan: How'd you print it? Dot matrix?

Lovhaug: Yep. Dot matrix printer, photocopied, stapled, etc. We went down to the local copy shop where they had self-serve photocopying, copied it, and that was it.

Jordan: How many pages was it?

Lovhaug: Twelve pages.

Jordan: Who wrote all the articles for it? You?

Lovhaug: Myself, Bill P1 from Q-Link fame and a few others. I downloaded a conference with Dave Hanie and Jeff Porter from Commodore and got permission from Q-Link to use that. Pretty soon, by March or so, we were selling two to three hundred copies. It just kind of grew from there.

The Two M's of Advertising: Mouth and Modem

Jordan: How did you get publicity?

Lovhaug: It was basically two things: word of mouth and modem. We went to our first Commodore show in Nashville, Tennessee in May of 1986. It was a CASE (Commodore Association of the South East) show. We drove it all the way.

Jordan: Who's we?

Lovhaug: Myself and some friends of mine who were writing for *Twin Cities 128*.

Jordan: Did you ever feel like you were an imposter when you'd get in there with the big boys?

Lovhaug: The first time I met Jim Butterfield I was suitably awed. He said he liked what I was doing. And good luck. It was kind of neat. In fact, one of the pictures we ran in our June issue is of Jim Butterfield cutting off my tie. I had unknowingly come down in a suit, thinking I should look impressive at this Commodore show. I didn't realize that the only people who wore suits at a Commodore show were Commodore employees. So anyway, Jim Butterfield was there in the same outfit he wears to all the shows—a sweatshirt and a tweed jacket which makes him look like the rumpled professor, and he cut off my tie.

Jordan: Kind of a circumcision into the industry, eh? How'd did your growth go in those early days?

Lovhaug: Our first year was small. By the end of the year we had a circulation of about a thousand.

Jordan: That's not bad. Were you in the red?

Lovhaug: Oh, no. We couldn't afford to be in the red. Quite frankly, if we were losing money doing this we couldn't afford to be doing it. We didn't overextend ourselves and we didn't advertise. People ask me that all the time because, well, for instance, there's one Commodore-specific magazine that lost $500,000 dollars their first year or something like that. I didn't have any money to lose. It quite simply had to make money. It didn't make us a lot of money. And it wasn't a full-time job then, either.

Jordan: What were you doing then?

Lovhaug: I had become disillusioned with the idea of becoming a lawyer. I was doing well in the classes but I was beginning to see that the only point to lawyering was to make a quick buck.

Jordan: Ah, so you were a young idealist then.

Lovhaug: I don't know, I don't think I'm a young idealist. That carries a bunch of connotations that I'm not sure I want to be labelled with. What I saw that the law was and what the law was turning out to really be did not mesh with my expectations. And, in addition, I was addicted to these computers.
Jordan: Do you still have that love?
Lovhaug: Well, it's changed. Now I do it in a different sense, I do it as a job.
Jordan: Do you feel like it's still fun?
Lovhaug: Sure. If it isn't fun, if you dread doing it, you've got to get out.
Jordan: Have you always had a dream to be a writer?
Lovhaug: I never set out to be a writer—I was going to be a lawyer since about seventh grade. But I've always been fairly good at writing, at least that's what people tell me.
Jordan: I kind of stopped you back there where *Twin Cities 128* was up to 1000 subscribers. Take it from there.
Lovhaug: It simply grew and grew. As I was able to put more time into it, it started to grow. It was beginning to become a full-time occupation.
Jordan: What were the watershed events—I'm assuming there were some—that spurred growth?
Lovhaug: A couple of things helped quite a bit. One thing is that along about late spring of '86, GEOS and I discovered each other. We were at that Nashville show and some people were showing it. One thing led to another, and I became a beta tester for GEOS. We started using GEOS for our production process. We were, without a doubt, the first people using GEOS for desktop publishing because it hadn't even been released yet. Because of this, when GEOS was being demonstrated in shows and they wanted to show what could be done with GEOS, they pulled out a copy of *Twin Cities 128*. That helped our exposure.

Along about that time, Commodore management started seeing what we were doing and they wanted to promote us too which led to my first article being accepted in *Commodore Magazine*. It was about doing personal publishing with GEOS and was handed out at the winter CES in 1987. So GEOS helped a lot.

A second big help was in the telecommunications area. I was invited to run the 128 area on Genie in '87. Then later on that year I was invited to do this on Quantum Link as well.
Jordan: Are you able to keep up with all this?
Lovhaug: [*Laughing*] I try. It's difficult. Anyway, our name began to be known. Telecommunications really is a big magnifying glass. So very slowly it continued to grow. That was one of the first big breaks . . . those two go together.

The other big break came when Mark Brown from *INFO Magazine* called me. They were moving more into Amiga stuff, and they wanted me to help them keep in touch with what was going on with the 128. They began to mention us in their articles. I think they liked what we were doing. There is really only one paradigm in this business for doing a magazine like we're doing and that was *INFO*. They did it first and we followed their model. Plus, they let us buy advertisements in their magazines, something most magazines won't allow since we're also a magazine.
Jordan: Do you think the ads did you much good?
Lovhaug: Sure. It made a big difference. It was a gamble back in those days for us to buy an ad in INFO.
Jordan: What are you at now in subscribers?
Lovhaug: We're at about 4500. And growing. I feel real comfortable with it. I'm not getting rich—I drive a 1966 Oldsmobile.
Jordan: What's your vision for the magazine?
Lovhaug: Twin Cities, of course, is tied to the 128. Well, actually, we're not a magazine that merely supports a machine; we're a magazine that supports users of a machine. There's a difference. And I assure you that for years to come there will be people using the 128. So we have a future, and I have been involved in a number of other projects. But I have a plan besides all that.

The Dream

Jordan: Yes, I've heard about this. But not from the horse's mouth. Explain it again.
Lovhaug: What I would like to do is to be allowed to support the 128 after Commodore moves away from it. This involves more than just customer support. It involves the ability to make and market those things that make the 128 better, e.g., RAM expansions, disk drives, monitors. I am trying to create a 128 total support company which would be involved in hardware manufacturing, distribution, product support and publications.
Jordan: Would you have Commodore's official sanction?
Lovhaug: There are several ways to go about this, however it would certainly be important to have Commodore's endorsement. There is a precedent in the computer industry for my idea. It was done by Apple with a company called Sun Remarketing. Essentially what that company does is market Apple III's and Lisas. In the beginning, they were a venture capital operation of Apple Computer. Eventually, they became their own company. I'd like to see Commodore spin off an eight-bit division. I'd like to be involved in that.
Jordan: I'm still not clear on what you want to do, exactly.
Lovhaug: What Loren Lovhaug wants to do is head up an effort, to be the president of a company which brings together several key players who are interested in sustaining the Commodore 128. What I really hope comes through in this interview is that I'm trying to make it easier for Commodore to take care of their own customers and to eventually have them as renewal customers, customers who will want to buy a Commodore product again.
Jordan: Who are these key players, besides you?
Lovhaug: I've had discussions with five or six parties who are interested in this concept, including Commodore, Busy Bee, Briwall, Free Spirit, Berkeley Softworks, and others. I want to bring these companies together and form one support company who support that machine fully with a line of hardware and software. It's pretty nebulous right now because we don't know what, if any, involvement Commodore might have in this.
Jordan: How far along are you on this with Commodore?
Lovhaug: It's hard to tell at this time. We've had some talks with executives, however, with recent personnel changes, further discussions are still necessary. Preliminary talks with the new management have been positive. I have some ideas in customer support which should interest them. For example, I believe we could transform customer support from a cost center to a profit center.
Jordan: It sounds like at this point you're still in the embryonic stages of this thing.
Lovhaug: It's a little further along than that: maybe the fetal stage.
Jordan: Gear-shifting time. I doubt if anyone uses 128's as much as you do. Tell my readers what your favorite 128 utilities, applications, etc. are.
Lovhaug: My favorite utility is a program by Kevin Heisel called Disk Whiz 128 which is essentially a file copy wedge that does all kinds of things. It's a public domain program. My favorite application is word processing and I like three of them: *Pocket Writer II*, *The Write Stuff 128*, and

Paperclip III. I have four 128's and on any given day there's likely to be at least two word processors up and running.

Jordan: So you have true multitasking.

Lovhaug: Right. One of my views of multitasking is a chair with wheels. I just slide from one 128 to another. I use each of these word processors at their best strength. For instance, if I want to do a document that integrates with *Superbase*, I would use *Superscript 128*.

Jordan: Is *Superbase* your favorite database?

Lovhaug: Without a doubt.

Jordan: Any games you like especially?

Lovhaug: I'm a big fan of a public domain game; machine-language, 80-column animation, the works, called "128 Invaders." It's excellent.

Jordan: I have an opinion I'd like you to react to on this subject. It seems to me that a lot of the hacking that has been done for home computers has been a lot of utilities and so forth whose primary purpose is to make programming easier and better. This is all good and well except that it kind of begs the question of home computing. I mean, where are the practical applications?

Lovhaug: If you came into home computing thinking that you'd be able to balance your checkbook with it and that sort of thing, you'd be in for some disappointment. But if you came into it realizing that you can use it for some things, but that the majority of use for a home computer is simply as a hobby, then you'd be happy. It's a vehicle for entertainment. That's when you realize that computing for computing's sake is okay. It's when you start to make these grandiose declarations how home computing's going to save the world that you get into trouble.

Jordan: Nobody makes those declarations anymore, do they?

Lovhaug: I think to a certain extent computers are still marketed that way. The real truth is, what are computers really good for? They're great for word processing, spreadsheets, and for data retrieval. In 1985 it was reported that 90 percent of all computer use, home, school, and business, was for word processing. So at that point, computers had really established themselves as glorified typewriters. Today, spreadsheets and databases are truly useful applications. I use them all the time. Of course, most people don't have 10,000-name mailing lists like I do.

Jordan: Is there any hope in your mind that eventually home computing will fulfill that early dream? That is, will it rise beyond just being a hobby?

Lovhaug: Well, it already is. The thing is, it's just disguised. There are home computers in your microwave, your VCR, your compact disk player.

Jordan: Right, but how about the general purpose Shopmate computer. Is there an application out there that some dreamer will dream up, one that hasn't been invented yet?

Lovhaug: There are people who are trying to make markets out of things that may or may not be successful. Maybe desktop video will do it.

Jordan: My guess is the CD-ROM with gobs of fast memory will do it.

Lovhaug: Yes, and we're not very far away from that right now.

Jordan: Any closing comments on the 128?

Lovhaug: Just one: I am sure that people will be using it for years to come, and it is our intention to be there to support them. The 128 is a great home computer.

Jordan: Hear, hear.

Readers interested in getting a copy of Twin Cities 128 *should write to: Twin Cities 128, P.O. Box 15578, Minneapolis, MN 55411.*

Programming/Julia Sets

Continued from page 47

Simple Mandelbrot 128

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10 XL=-2.25:XR=.75:YB=1.5:YT=-1.5'GYJG
20 DX=(XR-XL):DY=(YB-YT)'ERAF
30 GRAPHIC 1,1'BDHA
60 SM=3:CT=44'CILF
70 FOR X0=XL TO XR STEP(DX)/160'FNJJ
80 FOR Y=YT TO YB STEP(DY)/100'FMBK
85 P=X0 : Q=Y'CGGM
90 A=X0*X0-Y*Y+P:B=2*X0*Y+Q:C=0'KSOQ
100 R=A*A-B*B+P:I=2*A*B+Q:C=C+1'LQTG
110 A=R:B=I'CFMX
120 IF R<-3  THEN 135'EFXA
130 IF R<SM THEN IF C<CT THEN 100'GJNE
135 IF C=CT THEN 220'DGGG
140 X1=INT((X0-XL)/((DX)/160))'FTBG
150 Y1=INT((Y-YT)/((DY)/100))'FSJH
210 DRAW 1,X1+80,Y1+50'DLLB
215 GET K$'BCQD
216 IF K$="S" THEN SLOW'EDCG
217 IF K$="F" THEN FAST'EDNH
220 GET K$'BCQY
221 IF K$="S" THEN SLOW'EDCC
222 IF K$="F" THEN FAST'EDND
223 NEXT Y,X0'BERC
```

END

Simple Julia 128

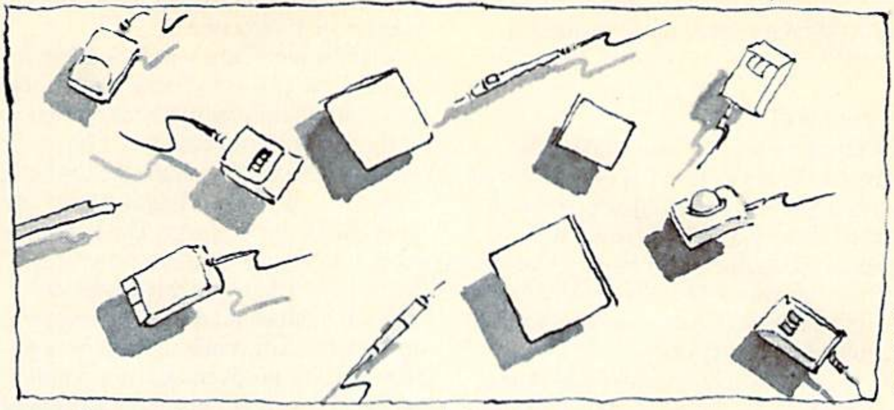
```
1 REM SIMPLE JULIA'BLFC
2 XL=-1.8:XR=1.8:YB=-1.8:YT=1.8'GXOJ
3 P=-.745:Q=.113'DLWF
4 INPUT "ENTER XR";XR:XL=XR-(2*XR)
  'ENSK
5 INPUT "ENTER YT";YT:YB=YT-(2*YT)
  'ENVL
6 INPUT "ENTER P";P'BCEH
7 INPUT "ENTER Q";Q'BCGI
20 DX=(XR-XL):DY=(YB-YT)'ERAF
30 GRAPHIC 1,1'BDHA
60 SM=3:CT=44'CILF
70 FOR X0=XL TO XR STEP(DX)/160'FNJJ
80 FOR Y=YT TO YB STEP(DY)/100'FMBK
90 A=X0*X0-Y*Y+P:B=2*X0*Y+Q:C=0'KSOQ
100 R=A*A-B*B+P:I=2*A*B+Q:C=C+1'LQTG
110 A=R:B=I'CFMX
120 IF R<-3  THEN 135'EFXA
130 IF R<SM THEN IF C<CT THEN 100'GJNE
135 IF C=CT THEN 220'DGGG
140 X1=INT((X0-XL)/((DX)/160))'FTBG
150 Y1=INT((Y-YT)/((DY)/100))'FSJH
205 IF X1>80 THEN END'EEIE
210 DRAW 1,X1+80,Y1+50'DLLB
215 DRAW 1,241-X1,149-Y1'DNMH
220 GET K$'BCQY
221 IF K$="S" THEN SLOW'EDCC
222 IF K$="F" THEN FAST'EDND
223 NEXT Y,X0'BERC
```

END

by Matthew Leeds

A Better Mousetrap

The old saying goes that if you build a better mousetrap, the world will beat a path to your door. In the computer world, a new twist has been applied as manufacturers work on building a better mouse.


LINDA CLARK

Since your Amiga comes equipped with a mouse, why would you consider buying another? Simply put, not all mice are created equal, and in some circumstances a mouse is not the best choice as an input device. In fact, a lightpen, trackball, or graphics tablet may be better suited to some applications, and the benefits of an improved mouse may make your everyday work on the Amiga easier.

The Amiga mouse is a simple device. You can practically disassemble yours to see how it works. Turn it upside-down and notice that it contains a ball held inside by a rotating retaining ring. If you turn the ring you can remove it, and the ball. Look inside the mouse and you will see three rollers. One of the rollers is spring mounted and keeps the ball pressed against the other two. The other two rollers are connected by shafts to encoders. These encoders send electrical pulses to the mouse port on your Amiga.

The pulses are decoded to provide information on mouse position, direction and speed. As you move the mouse, the ball presses against the rollers, they turn the shafts, the encoders send their pulses, and your Amiga knows where to position the mouse cursor.

If dirt, grit or other contaminants work their way between the ball and the rollers, your mouse can't send accurate information. Keeping the inside of your mouse clean insures the correct response when you move the mouse.

The Amiga mouse also has two buttons mounted on top. Each button sends its own signal when pressed. The buttons trigger switches, and you can both feel and hear the switch when you press the button.

The Amiga mouse weighs in at about four ounces. Although the Amiga 500 and 2000 have screw connectors to secure a mouse at the mouse port, the Amiga mouse does not offer screw connectors. The buttons are fairly stiff, but do offer good auditory feedback when pressed. And of course, they are priced right—they come free with the machine.

Third-Party Mice

What can a third-party mouse offer that the Amiga mouse does not? For one, a third button. As unlikely as that sounds, I've tested two mice that each have three buttons. The middle button seems odd at first, and under AmigaDOS 1.3 has no specific use, but I've found at least one utility program, MiddleButton by Michael Sims, that turns the middle button into a SHIFT key. This lets you do multiple selection of icons without using the keyboard, a very handy feature. I have also been told that this may become a standard feature of the next version of AmigaDOS, along with any other options that specific applications may wish to support.

A third-party mouse can also be easier to use. They can be lighter, have better tactile and auditory feedback when the buttons are pressed, and can have a shape that better fits the hand.

The My-T Mouse (a bad pun) from Southern Technologies is a three-button mouse that weighs in at 3.5 ounces. It is both narrower and shorter than the Amiga mouse, and a little taller. It is also more rounded, and the buttons partially hang over the front of the mouse. The mouse port connector has screw connectors with plastic thumbscrews that are easy to turn even with the overhang on the front of my Amiga 2000.

Because the My-T Mouse is smaller and lighter than the Amiga mouse I find it easier to use and less fatiguing. The mouse buttons do not offer much in auditory feedback, but they do seem to have a little more travel than the Amiga mouse, making it easier to accurately single-click. The shell of the mouse has a small lip on the underside that serves to keep the mouse very level as it moves across the mousepad, but it also creates a slight noise as it rubs. This noise gets irritating after a few hours. It is possible that a different mousepad might eliminate this noise.

The Boing! Mouse from GfxBase uses a completely different technology than the Amiga or My-T mouse. It is an optical mouse, with no moving parts other than the mouse buttons. Instead of a system of ball, rollers, shafts and encoders, it uses a light-emitting diode (LED) and two light sensors, plus a special mousepad. The mousepad has a reflective surface overlaid with a fine grid of lines. As the mouse is moved over this mousepad, the LED is reflected and interrupted by the grid lines. This creates a series of pulses that are read by the light sensors. These pulses are converted into the same electrical pulses sent by a standard Amiga mouse and passed to the mouse port.

The Boing! mouse is about the same width and length as the Amiga mouse, but has a lower profile. It weighs in at just three ounces. The buttons (all three of them) have a short travel but an excellent tactile and auditory feedback. Instead of Teflon™ skid pads, it uses two felt pads. These both keep the mousepad clean and produce virtually no noise. The mouse port connector has two small screws that require a screwdriver and are not easy to get to once the plug has been inserted in a 2000.

The Boing! mouse is my favorite of the three. It is the lightest, the quietest, offers the best feedback from the mouse buttons, and is the only one that comes with its own mousepad. Because it does require its own mousepad, I was concerned that if the pad was destroyed or damaged, I would be stuck with a useless mouse. The staff at GfxBase assured me that they have yet to hear from a single customer who has had trouble with the mousepad, and they offer

replacement pads at a very reasonable cost.

Trackball

There are times when a mouse just doesn't feel right. If you've ever played an arcade game equipped with a trackball, then played the Amiga version with a mouse you know what I mean. That's why when I discovered that Zebra Systems was offering modified Wico trackballs for the Amiga I had to try one.

The modification involves two basic changes: changing the electrical pulses sent by the trackball to those required by the Amiga, and adding a second button to simulate the right mouse button plus a mouse port passthru connector.

A trackball can be thought of as an upside-down mouse. It works in basically the same way. A ball presses against rollers attached to shafts that produce encoded pulses. The differences are that once you set the ball spinning you must physically stop it, and that the buttons are not as easy to use with one hand.

The Zebra trackball is really designed to be used with two hands. It's difficult to both spin the ball and press the buttons. The mouse port passthru connector is a good idea, in that it lets you use the mouse buttons on your mouse with one hand and spin the trackball with the other hand. Unfortunately, the passthru connector does not pass mouse position information, only mouse button presses. If you want to use only your Amiga mouse, you must disconnect the trackball from your Amiga, and re-connect the mouse.

There are no screw connectors on either the trackball mouse port plug or passthru port. The added second button is much smaller than the factory-installed original button, and it has a much different feel and auditory feedback. I found it hard to keep the second button depressed fully while selecting menu items, resulting in incorrect menu selections. This occasionally resulted in problems.

If you play a lot of games on the Amiga and miss the feel of a trackball when playing arcade-style games, you may want to consider the Zebra trackball, but as a full-time replacement for a mouse I can't recommend it.

Lightpen

The first exposure most of us have to artistic expression is doodling with a pencil or pen. For many, it remains the most natural feeling way to create images. A lightpen feels similar for many, while others tend to describe it as being more like a paintbrush or airbrush.

A lightpen contains a light sensing device and one or two switches. As the electron beam that illuminates the phosphors on the inside of your monitor's CRT sweeps across the face of the picture tube, it creates a spot that is brighter than any other portion of the image. The light-sensing part of the lightpen can detect this bright spot. A software driver provided with the lightpen reads a signal from the lightpen (usually connected to a mouse port) and also keeps track of the position of the electron beam (the computer keeps track of the horizontal and vertical position of the beam at all times). Since the driver knows where the beam is on the screen, it also knows where the pen is pointed.

> The benefits of an improved mouse may make your everyday work on the Amiga easier.

Inkwell Systems markets the only lightpen I've found for the Amiga. It comes with driver software that can be run from either the Workbench or CLI. You can also add it to your startup-sequence— something I recommend if you plan to use the pen on a regular basis. The pen plugs into mouse port 1, and the mouse is moved to port 2, where it continues to operate. This has several advantages and one disadvantage. The advantages are obvious, you can still use the mouse for operations that are more convenient with that device. The disadvantage is that if you don't run the lightpen driver in your startup-sequence, the Amiga won't recognize the mouse plugged into port 2. On minimum memory Amigas you might not want to run the driver unless you plan to use the lightpen. Since it's not a good idea to unplug and plug anything while your Amiga is powered on, this creates a quandary. The lightpen manual is no help here, as it (and the software driver) instruct you to unplug and plug while the power is on.

The manual itself is sparse, printed on a nine-pin printer, and photocopied. The driver is not compatible with *DeluxePaint II*, but will work with *DeluxePaint III*. The software includes a calibration program that lets you adjust the offset for the screen cursor. It also includes an audio feedback option that generates a distinctive tone for each mouse button on the barrel of the pen. This is not only useful, but also necessary, as I had trouble getting the touch-sensitive buttons to respond.

I also had trouble using the lightpen on my flickerFixer-equipped Amiga 2000. Since the flickerFixer buffers the video signal, this was to be expected. The pen did work OK on my Amiga 1000 and 1084 monitor. I found holding the pen in mid-air fatiguing after only a short while, but if you want to use a lightpen on your Amiga, the Inkwell lightpen functions adequately.

Graphics Tablets

The final category of input devices is bit pads; sometimes called digitizing tablets or graphics tablets. There are two basic types available for the Amiga, pressure sensitive and electromagnetic. They have a few features in common: the user designates a point on the tablet via a stylus or pointing device. The pointing device's position on the tablet is sensed by a wire grid embedded in the tablet, and an electrical signal is sent to the Amiga where it is interpreted via driver software. The first tablet I used was the Easyl, produced by Anakin Research and marketed in the U.S. by Inforite Corp. The tablet is 8.5 × 12 inches in active area with a resolution of 1024 × 944 points. The pad is accurate to about 0.5 mm. It uses a pressure-sensitive technology to read the position of the stylus. Instead of placing buttons on a stylus, the mouse buttons are on the tablet itself. The tablet is interfaced to the Amiga via a card. I used the Amiga 2000 version; the card can occupy any slot.

The driver software offers several options. You can select an NTSC or PAL driver, adjust the aspect ratio of the pad to control distortion of circles, set the action of the tablet buttons for right- or left-handed users, and remove the driver from memory at any time. The driver can be run from the startup-sequence, or any time prior to starting an application you want to use the tablet with. The mouse remains active at all times.

Inforite has new software drivers under development for the Easyl. Although I was unable to test the new software, a preliminary user's guide includes mention of selectable aspect ratios, support for overscan, settable drawing precision, parameter file creation, and a single driver with a preference utility for all configuring.

The Easyl also comes with its own graphics program. This may have been important when the Easyl was first re-

Continued on page 61

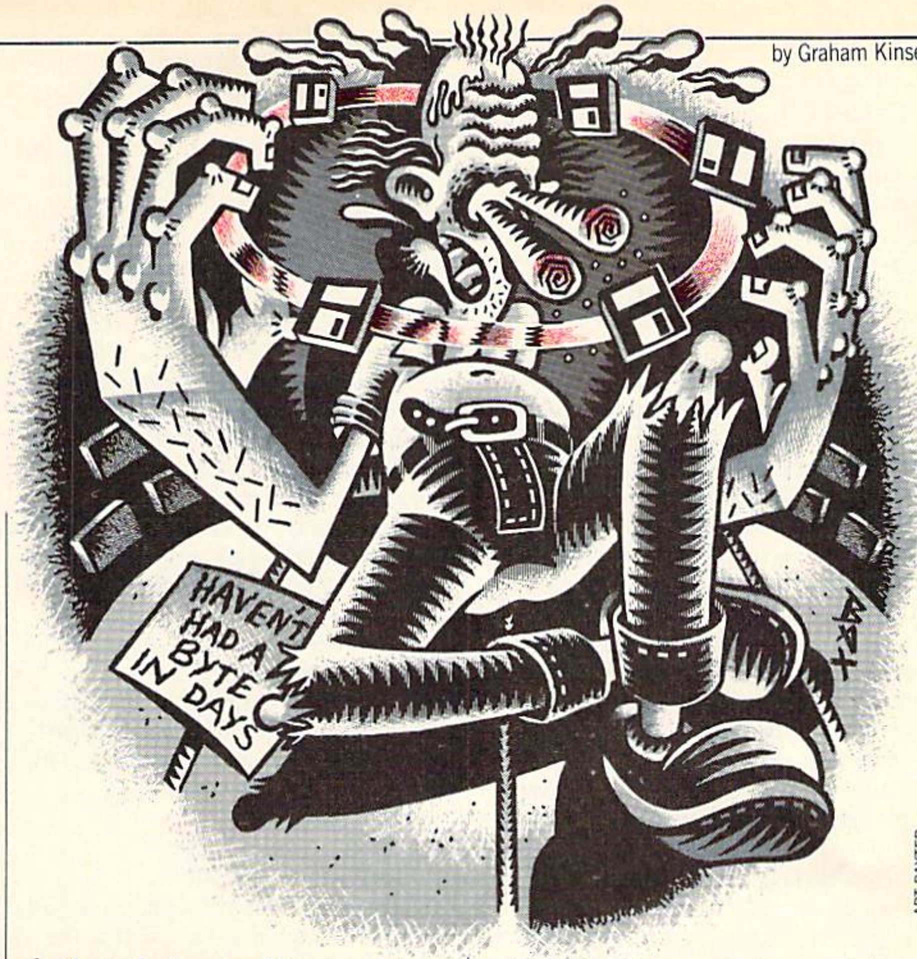
by Graham Kinsey

Amiga Public Domain

This month I review a new Star Trek game that is vastly different from the one I reviewed in the March '89 issue, plus the latest update to a great robotic combat game.

For each program, the author is given when that is known. If I obtained a PD program directly from PeopleLink's AmigaZone, I list the AmigaZone download file number. When a public domain program has been classified as shareware, this is also mentioned, with the suggested amount.

Due to the large size of animations that are coming out for the Amiga, assume that the normal size of an Amiga animation is one megabyte. Unless otherwise specified, *all* animations reviewed here require one megabyte to run.



ART BAXTER

Star Trek: by Jimbo Barber
(AmigaZone file #16302-16306;
Shareware: $5)

For those who already have Eric Gustafson's Star Trek game (reviewed in the March '89 installment of this column), here's another Star Trek game of an entirely different nature, but as good as Eric's game. This Star Trek game does not boot by itself, but instead runs from a Workbench icon (however, you can boot off the boot disk of this two-disk game to use the game's own fonts).

Once you click on the icon though, you are asked to close *all* workbench windows. This is due to the memory requirements of this Star Trek game. While it only requires one megabyte of total memory, it eats up virtually all of the 512K CHIP memory inside the machine. Not only can you not run normal programs, you may even not be able to run tiny utilities like VirusX and many of the clock programs. You also cannot run this game with three floppies drives hooked up to your Amiga no matter how much FAST memory you have installed in your machine. Of course if you have a one megabyte Agnus chip in your Amiga, you don't have to worry about any of this.

Tell the program it's OK to start loading, and 30 seconds later the digitized Star Trek opening theme will start playing, while the screen shows the *USS Enterprise* orbiting a planet (the graphic display is much slower and less impressive than in Eric's version, but Jimbo did do a better job with the digitized theme). Then after some more loading the main game screen will appear.

Most of this screen is filled with all sorts of nicely drawn gadgets. You may not be impressed with the graphics in this game at first, but that's not this game's strong point. At the top of the screen the StarDate is displayed. You are on a five-year mission, and you must survive until the StarDate 5000.0 (the game starts at StarDate 0000.0) to have a chance at winning the game.

Directly below the StarDate display is the main view screen. While the default view is to look out directly ahead into space (which is selected from the Screen gadget), there are two other views. The Scan view displays a short range scan of the quadrant, which is the view used when in combat with Klingon or Romulan forces. The Map view displays the coordinates of the quadrant the Enterprise is currently in (this game uses a huge 1000 × 1000 map, so there are one million quadrants in this game's universe). To the sides of the view screen are the speed and current shield strength indicators as well as the Helm Engage and Fire Weapon gadgets (which will be explained later).

The nine gadgets at the bottom of the screen are the main controls. You will be forced to click on the Communications gadget at the beginning of the game (but only to receive a good luck message from StarFleet). This gadget is only used to receive messages from StarFleet (or other organizations), but that is important. While your primary goal is to survive, your secondary goal is to carry out any and all missions given to you by StarFleet. If you manage to make it to StarDate 5000.0, but haven't completed all your orders, then you still lose the game. When you receive a message you are not forced to read it when the red light on that gadget lights up, since the computer can hold the message (and several others as well) until you are ready to deal with it).

When you click on the Navigation gadget, you are presented with the Navigation screen. The Destination window is filled with places that you can go (including a special option called "Last StarFleet Orders," in case you forgot your last instructions from StarFleet). In addition to all the various Warp speed gadgets and the Impulse speed gadgets, you can tell Sulu to automatically establish an orbit around a planet as soon as you get there. There are also a set of controls for tactical impulse movement during combat.

Once you are finished with this screen, hit the Plot Course gadget and then Sulu will tell you (via a digitized sample, of course) when you can select the Engage gadget on the main screen to execute your course orders. While traveling at Warp speed you may run into Klingon and/or Romulan forces. If this happens, you'll first want to switch to the short-range view via the Scan gadget and then access the Shields screen. The Shields gadget displays the current strength of the four shields and also gives you access to the shield activation buttons. While you can choose which shields to activate, usually you'll just use the All Shields Engage button. Once the shields are up you select the Weapons gadget to destroy your attackers. You may choose either phasers or photon torpedoes, but not both. At this time you also must choose a direction, and only then may you arm the weapon. Chekhov will then inform you that the weapon ready to be fired, and the red light on the Fire gadget will light up. The purpose of the light is to remind you that the dilithium crystals (which power the ship) are being drained, because it takes energy to keep the weapons armed.

If the ship has been damaged, you can select the Damage Control to see how bad things are. Assuming your dilithium crystals aren't totally drained repairs will take place automatically, however you may not repair your ship if you are still under attack. If you click on the Engine Room gadget Scott will inform you of any damage the engines, as well as how drained the dilithium crystals currently are (including a percentage breakdown of how they got that way).

If you get confused, the Sensors gadgets will tell you what your current status is (i.e. where you are and if you are under attack). If you want more information on a subject, click on the Computer gadget for data on people, places and other subjects that the computer has information about. Finally, the Transporter gadget gives you access to the ship transporters, including a list of what important objects you have on the ship, and what objects may be beamed up from the planet or StarBase that you are currently orbiting.

There are also standard Intuition menus at the top of the screen. Three menus are devoted to level of difficulty: one determines how often you will encounter Klingons and Romulans, one controls whether you can escape from combat, and the other determines if enemy forces are allowed to move. These options can ruin the game if choose the less difficult modes. There are also options to turn off the sound, to speed up the game (since the first orders from StarFleet don't show up until around StarDate 150.) Thankfully games can be saved and later loaded from the menus as well, since this Star Trek game takes many hours to play. At first, playing the game might seem simple since the missions given by StarFleet sometimes turn the Enterprise into an expensive courier. However, the addition of combat and dilithium crystal drainage make this game more complex, not to mention that fact that some of the orders have nasty twists in them.

You certainly may install this game on a hard drive (Eric's game is tough to install on a Hard drive by comparison), and there's also a program that will copy all the sound effects into RAD: (but it will not set up RAD: device for you).

This game certainly doesn't rival Eric's Star Trek game in the eye candy department, but you'll end up playing this verison for a much longer time.

AdjClock: author unknown
(AmigaZone file #16242)

A crude program that helps you adjust the trimmer capacitor that controls the clock speed of the battery-backed clock in the A2000. For every second that goes by (this base value is generated by the electrical power frequency), it will print how many 1/60ths of a second the clock has recorded. If you see too may 59 or 61 values then you know your clock isn't keeping correct time.

CircuitWar: by Richard Reed
(AmigaZone file #16142)

A strategy game using all sorts of elements from circuitry. The object here is to use your CPU to build a network of circuits, and also create an army of gridrunners (the only mobile unit in the game) and use them to destroy your opponent's CPU. Resistors, capacitors, diodes, switches and transformers are all used in building these circuits, and all may be used to benefit your gridrunners (and/or to damage your opponent's gridrunners). The graphics are colorful, and there are some very nice sound effects in the game. Up to four people may play, but there is no computer opponent option in this game. Unfortunately the save function has been disabled (the author says that if he comes out with a commercial version of the game, the save function will be enabled, but until then there is no way to save any game in progress), which is very annoying since one game can take many hours to play.

Clerk: by Sanford Finlay
(AmigaZone file #16332; Shareware: $10)

An accounting program written in AmigaBasic. Features include password protection, duplicate invoice checking and a maximum number of 22 accounts. In addition to the accounts payable, accounts receivable and general ledger modules there is a file cabinet module which is used for storing telephone numbers and tax numbers.

Flag: by Michael Fahrion

A nice IFF ANIM-format animation of a US flag rippling in the breeze that was created with Mindware Intl.'s new 3D animation program *PageRender 3D*. The real bizarre aspect of this animation is that at times the stars in the flag appear to be coming unglued from the flag and will soon fall off the flag (watch it and you'll see what I mean). This animation will run in 512K of memory.

EnglandMusic: author unknown

These are two assembly language music demos that arrived via England called Glowing Ears II and Ivory Tower II. The Ivory Tower II piece is one of the best music songs I have ever heard on the Amiga (especially the acoustic guitar solos). A separate program in included in the archive to turn off the low-pass filter. The only bad thing about these demos is that they won't return the memory that they use, making it difficult for 512K Amiga owners to run then often without rebooting. Since these demos will abort with any mouse button click you can forget about trying to multitask with them as well (at least from the Workbench anyway).

GeoView: by Art Dahm
(AmigaZone file #16232; Shareware: $10)

For those who recently converted from the C64, this program will allow you to view (in either 320x200 of 640x400 resolutions) and print GEOS GeoPaint files from the Amiga. Please note that this version will NOT convert GeoPaint files to IFF (you must send in the shareware fee to get that capability, and also the capability to convert GEOS fonts to Amiga fonts).

Locks: by Khalid Aldoseri
(AmigaZone file #16339)

If you are annoyed by programs that don't release locks on files when they quit, this program will break those locks for you. You must be sure that you know

what you are doing when you use this program, since you can easily crash the Amiga if you're not careful.

BattleForce: by Ralph Reed
(AmigaZone file #16628; Shareware: $25)
This is version 3.0 of Ralph's great robotic combat game, which was formerly known as BattleFort (and was last reviewed in the December '88 installment of this column). The biggest change in BattleForce is that there are now four different modes of play. The simplest mode of play is the Arena mode. In this mode you go one-on-one against a computer controlled mech. While the matchup is simple (compared to the other modes at least), new features that have been added to BattleForce make even this mode complicated. For example, houses and house loyalty have been added. What this means is that your mech/pilot unit may decide to be sponsored by one of the major houses. Once this happens, other houses may be offended by your action, and decide to take revenge on you in the form of sabotage to your mech. If they succeed in this act, you may find that critical parts of your mech may fail during the heat of combat! If your pilot is able to find sabotage in the mech, then you are given the chance to attempt to repair it before combat begins.

Pilots (the humans who control each mech from inside the head portion of the mech) are now a factor. Pilots can accumulate experience points by defeating other mechs in combat. The more experience your pilot has, the easier it is for him to fire the weapons successfully and move the mech in precarious situations without falling down. You may also sacrifice experience points in order to modify a crucial piloting/gunnery skill role to your advantage. Related to this fact is that damage to your mech is also recorded after combat, and you must try to repair it with the money you have, which can also be won or lost by betting on the outcome of mech combat.

Pilots also have the option of trying to escape from a mech if combat is going very badly in order to retain experience. This is only successful if your pilot not only survives this process, but also isn't captured by the enemy. You also leave the fallen mech subject to capture by the enemy, who may even choose to use the mech against you at a later date.

If this isn't enough, try the Combat Patrol mode. In this mode it's still one person against the computer, but this time each side controls a team of up to seven mechs. Even more interesting is the Combat Mission mode where up to four teams (each controllable by any number of players or the computer) may be used.

Finally, if all the new features in the game overwhelm you at first, the Simulation/Training mode eliminates the pilot, experience and damage factors (while you can still choose all sort of mech/team combinations). A very good game is now even better.

BindNames: by Dave Haynie
(AmigaZone file #16450)
If the number of assign statement calls is making your startup-sequence a bit unwieldy, BindNames can help. BindNames allows you to move all your assignments to a separate text file which is accessed by BindNames when you call it from the startup-sequence. BindNames will even make an assignment to multiple directories, therefore eliminating the need for the PathAssign program (which was reviewed in the July '89 column).

BBunny: author unknown
A nice FrameGrabbed ANIM-format grey-scale animation of Bugs Bunny dishing out some dessert.

DanForth: author unknown
(AmigaZone file #16429)
An ANIM-format animation involving Dan Quayle. This 640x400 resolution animation evolved from a recent episode of Saturday Night Live involving Dan Quayle and a pumpkin. This animation will run on a 512K Amiga.

SexAnim: by Harv Laser
(AmigaZone file #16553)
This G-rated (don't let the title fool you) ANIM-format animation shows off some of the animation capabilites of Electronic Arts' new DeluxePaint III program. Many different objects (both text objects and some fairly recognizable graphic objects ported over from VideoScape 3D) are being rotated in different directions. This animation will run in 512K of memory.

DiskPerf version 3.0: by Doug Keller
This is version 3.0 of the well known hard disk performance benchmark program Diskperf. This version removes a nasty bug, and adds extra benchmarks to the original version. One new feature in version 3.0 is a switch to benchmark floppy drives instead of hard drives.

DiskSal v1.40: by Dave Haynie
(AmigaZone file #16702)
Version 1.40 of Dave Haynie's superior replacement for the AmigaDOS DiskDoctor. This version is an update to the version of DiskSalv that was reviewed in the April '89 installment of this column. In addition to a few bug fixes, DiskSalv is much more tolerant of low memory conditions. Not only will it now not fragment memory as much as it used to, it also supports a LOMEM switch that forces it to conserve memory as much as possible (at the expense of some features). DiskSalv now doesn't require as much stack space as it used to. DiskSalv now supports a wildcard option for salvaging files, and also has a NODOS switch which will prevent it from reading AmigaDOS drives that would immediately crash the system if AmigaDOS tried to read the floppy.

I would like to dedicate this month's column to the memory of Scott "Hjalmer" Peterson, author of the popular shareware game GravAttack. Scott's game was awarded the Bronze Medal in the Games category for the Best of Amiga PD '87 awards (which was published in the August '88 issue of *Commodore Magazine*). Scott will be missed by all. Be on the lookout for Scott's final software work, the commercial game (which is an improved version of GravAttack) *Dr. Plummet's House of Flux* (which is being published by MicroIllusions). You might also want to check out Issue 10.3 of John Rydell's online magazine **Amy Today** which pays an in-depth tribute to Scott.

As always, I can be reached on the AmigaZone on PeopleLink (ID: G KINSEY), or on the IDCMP BBS (617-769-3172 (3/12/2400 baud, 105 Megabytes online, running 24 hours a day), addressed to SYSOP). If you have written a public domain/shareware/freely distributable program, or have obtained one that you think is worth mentioning to all Amiga owners, then please attempt to contact me via the above contacts, or through *Commodore Magazine*.

To signup to PeopleLink and their AmigaZone, call them at: 1-800-524-0100 (voice) or 1-800-826-8855 (via modem).

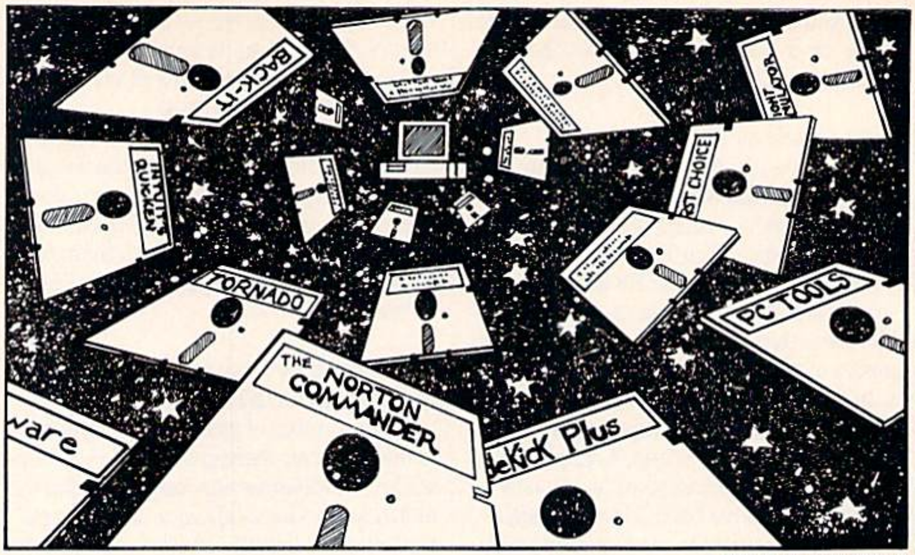
For information on obtaining some of the programs that aren't listed as being on PeopleLink (or for those who don't have a modem), please write (and/or send $2 for an Amiga PD catalog disk) to:

SMAUG
1015 So. Quincy Ave. #112
Quincy, MA 02169

by Daniel Grotta

Basic PC Software

Here's a good starter's kit of software for those of you who have recently purchased an MS-DOS computer.



DENISE FALESKI VITOLLO

A new computer is like a just-built, unfurnished house in that it doesn't come with any software, and without software, there isn't an awful lot you can do. Unfortunately, few, if any of your Amiga or Commodore 128 programs will work on the PC, although many of your data files can be transferred and converted for use in various PC- specific programs (more about that later). What you need immediately is a basic, inexpensive repertoire of software.

Here's our short list of recommended essentials, complete with average retail prices. They may not necessarily be the best or most powerful programs available, but they all have the virtue of being relatively cheap, easy to learn and simple to use. Later, after you have mastered the computer, you may wish to consider moving up to other programs, but for now, we suggest sticking to the basics.

The Norton Commander ($45-$60). Since you'll be using DOS for everything, you will save considerable time and frustration if the first thing you install is a program that will make DOS much more palatable and easier to use. We suggest *The Norton Commander 2.0* as the DOS shell of choice that will automate and simplify DOS commands, keep track of all your files, provide an easy editor for creating batch files and appending Autoexec and Config files, and perform a dozen and one other essential tasks without difficulty.

PFS: First Choice ($95-$120). Most serious computer users want and need the Big Four applications programs: word processing, database, spreadsheet and communications. Buying them individually can be quite costly, but purchasing an integrated package like *PFS: First Choice* will includes all four programs. Because they're integrated, if you learn the commands for one, you pretty much know them for the others. In addition, the data you generate from the spreadsheet, for instance, may be easily interchanged or incorporated in the database or word processor.

> They all have the virtue of being relatively cheap, easy to learn and simple to use.

Sidekick Plus ($125-$150) The original *Sidekick* is the grandaddy of instant pop-up programs — software that you can call up while you're in any other program by pressing a couple "hot" keys — and its latest version is still probably the best. Need a jiffy calculator? Want to check an appointment straightaway? Wish to auto-dial a telephone number this very second? Do you have to write a quick memo? *Sidekick Plus* will do all this, and more, right from the keyboard, any time you want and without having to exit from whatever program you happen to be running.

PC Tools ($40-$50) Just as every homeowner must have hammers, saws and screwdrivers for fixing falling ceilings or broken windows, computer owners need special software tools (called utilities) for fixing, fine-tuning and performing preventative maintenance on programs and files. *PC Tools* has an impressive array of easy-to-use utilities that can recover accidentally deleted files, correct an inadvertent format of the hard disk, do a hardware check of all the active ports and peripherals, "optimize" the hard disk so it runs better and faster, and perform a dozen other essential tasks vital to smooth running of your computer. Don't wait until disaster strikes before installing this program, since it might be your only way to repair or recover irreplaceable, otherwise lost data.

Intuit's Quicken ($35-$49) One of the primary reasons people buy computers is to balance the checkbook and help with tax returns. Unfortunately, most accounting programs are either unnecessarily complicated or designed for large corporations, which is little use to the person running a small business or managing a household. *Quicken* is a simple, but surprisingly sophisticated check- balancing program that allows you to set up multiple accounts, keep an accurate running balance, itemize tax deductible expenditures, project a basic budget and even print out checks. Its low price, ease of use and versatility make it a winner.

Back-It ($60-$80) Inevitably, ultimately your computer will suffer some sort of disaster, such as a hard disk crash or an overwritten file. The upshot is that months of irreplaceable work may be gone forever — unless you had the foresight to make regular backups (archival copies) of everything on the hard disk. Using DOS' backup program is tedious and time-consuming, which is why a utility like *Back-It* is worth its weight in gold. Installing, setting up and running the program is both simple and straightforward, and when (not if, because everyone eventually loses files) you need to restore lost data, it's just a matter of following the on-screen prompts and directions. But like all other similar programs, *Back-It* works only when you run it regularly.

Microsoft *Flight Simulator* ($33-$45) So much for business. Although the PC is not a game computer per se, there are lots of good games out there to amuse and entertain for hours on end. *Flight Simulator* is a virtuoso piece of leisure software that gives a startlingly realistic representation of what it is like to pilot a plane. By using

either keyboard arrows and keys or a joystick, you can take off, fly and land at various airports, pilot different kinds of planes, and program in prearranged difficulties or disasters along the way. *Flight Simulator* is so realistic that you might end up with a soaked shirt, or almost ready to hop in a real plane and go for a pilot's license. What's more, this program is, and has been for years, the litmus test for true IBM compatibility, since *Flight Simulator* can only run properly on a 100%-compatible clone.

Tornado ($55-$75) It's a note taker, database, freewheeling information processor and almost anything else you want that requires instantly accessible pop-up information. Rather than reach for a piece of scrap paper to enter off-the-cuff thoughts or phone conversations, all you do is hit a hot key to bring up *Tornado*. That allows you to write, edit, file, organize or retrieve almost any text, numbers, lists, etc., regardless of whatever program you're in. Because *Tornado* has no structure, setting up and entering data can be in any form you like.

Product Review: Cheap Storage Space

That 30 megabyte hard disk that you never, ever thought would get filled up now has only a few hundred thousand bytes free. That's a common enough dilemma, and the usual solutions is to go out and buy a bigger hard disk. But if you don't have the money or the space in your computer for another hard drive, you might consider the Datran DiskDoubler ($99) board.

The DiskDoubler, once properly installed, compresses all your data files (for maximum protection, it won't convert non-data files) — squeezing the air out of them, so to speak. This hardware/software approach can free up to 100% more space on your hard disk. You may even specify any files that you do not wish compressed, and they won't be touched at all. The DiskDoubler works automatically and transparently — you won't even know it's there — and won't affect copying to or from a floppy disk.

But before running out and getting one, consider a couple caveats. One, it requires about 60K RAM, so you may not have enough memory to run big programs like *DBase IV*. Two, it may slow down your disk drive operation. And three, it fills one expansion slot. However, the DiskDoubler is far cheaper than buying another hard drive.

Continued from page 56

leased, but it is outdated and outclassed now. The manual for Easyl is terse, and mostly devoted to using the included graphics program, but does give sufficient information to figure out how to use the driver software. There were no instructions on how to install the interface card into the 2000.

I found it difficult to maintain a consistent pressure on the surface of the Easyl, and this caused some problems. Since I couldn't determine when I had lost contact with the pad, I often found that the graphics programs I used drew incomplete lines, or smaller circles or squares, or mispositioned brushes. I also had some difficulty getting used to using one hand to draw and another to hold the buttons. The Easyl might be useful for tracing from an existing piece of art, but I found it awkward to use.

The second tablet was the AProDraw Summagraphics tablet from R&DL Productions. The tablet had an active area of 12 × 12 inches with a resolution of over 1000 lines per inch. The pad is accurate to .025 inches. It uses an electromagnetic sensing technique to determine the location of the stylus. Two different pointing devices came with the pad: a pen-like stylus with a single button on the barrel and a pressure sensitive tip, and a "puck"—a device that looks vaguely like a mouse with four buttons on the top and a transparent plastic piece attached to the front with crosshairs.

The tablet attaches to the serial port on the Amiga, and either pointing device can be connected to the tablet. I did not like the stylus, but found the puck both comfortable and familiar. The driver software offers many options: aspect ratio control, control over which puck buttons simulate mouse buttons, active screen area, overscan support, data rate, task priority and a scaling function. It also supports expansion serial ports. The manual was very well done, with lots of details and specific instructions. A complete trouble-shooting guide was included that could serve as a guide for other companies. The driver software disk even included sample source code and header files for programmers who want to write their own tablet programs and use tablet coordinate and button position data directly.

The AProDraw software made the Summagraphics tablet a joy to work with. The expanded work area of the 12-inch tablet made a mouse pad seem cramped by comparison. The puck controller was easy to use and glided smoothly over the tablet. Its electromagnetic pulses are strong enough to pass through up to 1/2 inch of paper, allowing tracing from almost any source.

The driver software offers several options. You can select an NTSC or PAL driver, adjust the aspect ratio of the pad to control distortion of circles, set the action of the tablet buttons for right- or left-handed users, and remove the driver from memory at any time. The driver can be run from the startup-sequence, or any time prior to starting an application you want to use the tablet with. The mouse remains active at all times.

Conclusions

What would I choose? If I were on a budget, the Boing! mouse would be my first choice. It's smooth, quiet, lightweight, and remarkably accurate. If money were no object, I'd get the AProDraw tablet in an instant. It changes the way you view drawing with a computer. Either device is a distinct improvement on the original Amaga mouse.

Product Information

GFXBASE
1881 Ellwell Drive
Milpitas, CA 95035
Boing! Mouse $129.00

Inforite Corp.
1670 S. Amphlett Blvd. #201
San Mateo, CA 94402
Easyl $499.00

Inkwell Systems
1050-R Pioneer Way
El Cajon, CA 92020
(619) 440-7666
Amiga Lightpen $129.95

R & DL Productions
11-24 46th Avenue 2A
Long Island City, NY 11101
(718) 392-4090
AProDraw $599.00

Southern Technologies
2009 McKenzie #110
Carrollton, TX 75006
(214) 247-7373
My-T Mouse $59.95

Zebra Systems
78-06 Jamaica Avenue
Woodhaven, NY 11421
Amiga Trackball $49.95

Continued from page 12

Knight Games: On the sword fights, keep pulling down as soon as you've finished one swing. You'll get so far ahead that when you knock out your opponent you'll have four or five shields left, plus the knock-out bonus. On crossbow, keep aiming for the small circle target, since it is worth the most points.
Shane Doucette
Fort Qu'Appelle, Saskatchewan
Canada

Law of the West: The man with a shotgun, the gunwoman and the gambler can turn around quickly and do you in.
Ernesto Jorge Ahuad
Buenos Aires, Argentina

Leisure Suit Larry: When you start this game, buy a whiskey and head toward the bathroom. Give your whiskey to the bum you find there; he'll give you a remote control in return. Go into the bathroom and read the walls until you see the words "The password is: Ken sent me."

Later in the game, you'll confront a pimp, who wants $100. Take out your trusty remote, using it to switch TV channels until the pimp likes one of the programs. He'll move out of your way and you won't have to pay any money.

Money is important in this game, but hard to win in the casinos. Whenever you win some, save the game, because it is very easy to lose.
Craig S. Robbins
Address Unknown

Mini Putt: To get past moving objects like the elephant trunk, place the cursor where desired. If you're on another screen, hit the spacebar to go to the screen where your ball is.

When you start your screen and the meter gets to the center line, push and hold the button, wait for the elephant trunk to move out of the way, then release. The ball should go past the trunk to put you in a good position.
Dan Vocke
Address Unknown

Mission Elevator: When you play dice at the table, choose two for your number. When you're ready to roll the dice, press the button long and hard. Keep it up and you'll get lots of points.
Chris Brigham
Middleboro, MA

Nine Princes in Amber: After completion of pattern, Imagine Eric. Upon arrival, use the rose pin on your suit to pick the lock of the case.

When in Dworkin's study, do not insult him. Try imagining the lighthouse in Capkia. (Stare at painting.)
Noam Rubinstein
Hastings, NY

Ninja: To score well in this game, all you need to do is keep throwing the crosses and throwing stars at your opponent. Sooner or later, he'll die.

If you run out of these weapons, just pick them up and use them again. But be careful that your opponent doesn't injure you when you're picking them up.

Also, conserve the statues that give you power. You should use them only when your power is low.
Craig Hintz
Cedarburg, WI

On Court Tennis: In the manual it says that you have to empty the cartridge port. But I have found that Fastload works perfectly, and it loads the program at an amazing speed.
Cory Moore
Westlock, Alberta
Canada

Out Run: To keep the timer between 70 and 80 seconds, load the game and use your reset button when the title appears. Then enter this line:

POKE 34711,234 : POKE 34712,234 : POKE 34713,234

To have user definable laps, enter:

POKE 37198,X

where X is a number between 1 and 255, representing the number of levels before the finish line.

To set the starting level, enter these lines:

POKE 37188,(number from 0-255)
POKE 34320,234 : POKE 34321,234 : POKE 34322,234

To remove the road colors, which in my judgment looks better, enter:

POKE 33393,173

To return to the game, enter:

SYS 38045

Robert Koon
Washington, DC

Pool of Radiance: When you start off this game, your rag-tag group will be low on money, but that doesn't mean that the best armour is out of your reach. Go to the training area and hire one Hero to go adventuring with you. Then go to the slums and get into combat. After you kill the enemy, tell the computer that you want to continue fighting. Cast a spell on the Hero, then kill him. You'll find that you have Plate Mail +1 and a Two-Handed Sword +1!

While adventuring through the slums, search blocks 0,0, 2,5 and 9,5 to find special prizes.
Ian D. Tabb
Clearwater, FL

The Prince of Magik: If you happen to die and the computer asks whether you want to restore or restart, type Restore.

When you see the picture, hit the spacebar two times. When it asks you for the code, type M and press RETURN. Do this three times, even though it says you have the wrong code. The game will start where you left off.

Repeat the whole thing again, and you'll start with around 256 stamina points.
Jeff Christensen
Spanish Fork, UT

Questron: Magic can be bought on Dread Island. Be sure you have lots of gold.

If you need more money for Magic, keep going back to the dungeon. It replenishes the gold every time you return.
Erik Levasseur
Uxbridge, MA

Questron II: Once you are able to buy bread of life from the cathedral, lose health points until you're down to 3,999. Then purchase 99 breads of life, which is the maximum you can carry at one time. When you use them, you'll have 13,899 health points!

You can get even more health points by continuing from this point and going into the dungeons or the tombs, *after* you save your place outside. Map the first few levels of whichever place you've entered, then reload your saved place. Now enter and grab all the urns you can (they give you health points), avoid as many monsters as possible, then get out and save your place. Repeat the whole process as necessary.
Trevor Greenwood
Oromocto, New Brunswick
Canada

Red Storm Rising: To learn how to think like a real sub driver, use the HELP key frequently, especially while learning the game. The tactical computer will recommend certain actions to take, and before you know it, you'll be doing the right thing on your own.
Rick Ryan
Colorado Springs, CO

Road Runner: It's very annoying in this game when you get up to level nine or so, lose all your lives and end your game. You can make things go easier if you follow this suggestion: When you start over on level one, you'll see a cave immediately at the top of the screen. If you go into that cave, you'll start at the level you left off at and gain an extra life.
Dennis Haines
Forked River, NJ

Spy vs. Spy III: Find the rocket silo and enter it after the bear chases you about. Don't move, but access your trapulator, choose your saw, and cut a hole in the ice. If your opponent enters the silo without all the required items, he will fall through the hole you have made. (Hee hee hee!)
Scott Johnson
Lubbock, TX

Starcross: To get the yellow crystal rod, give the portable library to the giant spider. To get the silver one, look inside the gun before you fire it. To get the clear rod, look through the black rod inside the observatory's laser projector.

To get the brown rod, find the alien chief and wait until he points at your space suit. He will give you his old space suit. When he's finished, point at the brown rod and it is yours.

Take off your space suit and climb the tallest tree you can find. You'll end up with the silver control bubbles.

If you want to end your career as a black hole miner, try to go to home, earth or Mars. Also try to shoot the computer, the alien chief or the giant spider.
Vincent Maldia
Dolores San Fernando Pampanga
Philippines

Theatre Europe: If you're playing the part of the Warsaw Pact, move all your northern armies opposite to the NATO armies, since you are greatly superior to them. Be careful around the southern opposition, as they are quite powerful.

Always drop your airborne army behind the NATO Danish Corps. Then attack them with the airborne division and up to three of your powerful northern Warsaw Pact armies. You will easily defeat them, leaving a hole in their forces. Use it to defeat NATO.
Edward Finkler
St. Joseph, MI

Top Gun: When the radar shows an enemy craft behind you, look at the enemy's cockpit. If he is at or close to your altitude, you'll see your craft compared to his target.

Then just maneuver out of his sights.
Vijay Parikh
Chicago, IL

Ultima IV: The bell can be found in the ocean at location NA LA. To find the book, look under "T" in the Lycaeum Library. The candle is in a secret room in Cove. To get into it, you must walk through a fire on the left side of the room with the Ankhin it.

To get to Cove, go down a whirlpool in a ship. You'll end up in the middle level of Lake Loch.
Ben Campbell
Christchurch, New Zealand

Usagi Yojimbo: Force ninjas and bounty hunters to the left side of the screen, then chop them until they are dead.
Jeremiah A. Hahn
Markham, IL

Wishbringer: To get the brass token, put the worm in the fountain and use the blanket to cover the baby Gru to keep him from waking. Wish for rain to free the Platypus.

The arcade game moves you around the map; it helps to use the grid included with the game.

To get back in the movie theater, take the gold coin back from Miss Voss. The theater floor is not as clean as it appears.
Daniel Alvarado
Arleta, CA

The Wizard of Oz: To get across the canyon, have Tinman cut down a tree, then use it as a footbridge. You can get past the Kalidas by telling Lion to attack. To get down from the cliff, first tell Scarecrow to jump, then tell him to make a pillow, then jump yourself.

To get past the main guard at the gate of The Emerald City, tell him of Glinda. Have JP lead you through the illusions. You can get past the wolves if you tell the Lion to roar. A Scarecrow attack will get you past the crows, and telling Tinman to "Shield Us" will help you pass the bees.

Most of all, when you get stuck, type Words. A list of key words will appear, and you can sometimes get clues from them.
Mike Barber
Park Rapids, MN

Zork III: After getting the old man to show you the secret entrance in the engraving room, go north to the beam room. Put an object in the beam, then go south one room to the button room. Press the button, and the mirror in the mirror room will open.
Liam O'Brien
Weehawken, NJ

Continued from page 37

swers to these questions, everybody will benefit."

"From my standpoint, I would suggest that Commodore do long-range studies. They should choose schools from the winners where you can study a high ratio of video and computer machines at the first or second grade level. Then Commodore should follow those kids all the way through their educational careers. Commodore should also provide these schools with up-to-date materials as the technology improves. I think a study like this will prove invaluable, especially since long-term studies are few and far between."

According to St. Lawrence, the long-range studies will help groups like the NSBA understand how to best use the exciting set of technologies that is coming onto the market and into the educational world. These studies are essentially "meta-studies," because they gather information from across the nation from the various bodies and colleges and universities who are doing original research on the impact of technology. They would also be of interest to the Office of Technological Assessment because they would be good, scholarly studies—either anecdotal or controlled studies—that would show how best to use desktop video.

Amiga's Value

St. Lawrence considers the Amiga valuable in the desktop video education market. "The advantage that the Amiga has is that it is a tremendously powerful machine for the money, and it is already preconfigured," notes St. Lawrence. "It already comes with very acceptable video signal circuitry. You don't even need a genlock card—you can record video output directly onto tape, although you can't superimpose graphics over video without the genlock card.

"You can make music with it, because it has a very sophisticated stereo sound chip in it. It is enormously fast, which is a tremendous advantage in education. It is much, much faster than the Apple II series or the IBM PC series of machines. The Amiga's specialized graphics capability is head and shoulders above the others. It is the most ready-for-video computer available today, and it is a good investment for the money. These are the fundamental educational arguments—speed, capability and cost. That is why it has attracted me and other dedicated educators, especially those educators with an eye to using it as a creation technology, and not just a technology with which one does drill and practice."

Potential Uses

These educational creation technology applications abound, notes St. Lawrence. Using a video signal coming through live into the Amiga, educators can create an electronic blackboard like they do on television football games.

Teachers could be drawing over video information as fast as the video is coming into the Amiga. For example, suppose a video camera is focussed on a botany specimen, and the Amiga is set up with a mouse or a light pen. A teacher not only can show the specimen to the whole class on a monitor, but she can also write in labels over the picture of the specimen. Or teachers could tape some educational video, pass the taped video through the Amiga, and draw over that video.

St. Lawrence notes that the combining of sound and picture using video machines and computers is almost infinite. It is a tremendously promising field for education. There is software that will digitize a frame of video, and software that will digitize speech and sounds. Teachers can generate music or edit speech or add echo. "The applications that we have seen that are actually using desktop video are very exciting. The kids are tremendously motivated— unbelievably. These kids learn like crazy from this. That is exciting." notes St. Lawrence.

As one example of educational use, St. Lawrence tells of a ninth-grade, earth-science teacher who went on vacation, and shot VHS footage of the Grand Canyon and Zion National Park. During a subsequent class, the teacher handed the footage to the students, asked them to research the sites, and make up "wraps"—voice-overs—about the rock formations. The students did the "wraps" along with the research and final editing. Because they were very highly motivated to do the project, the students got a great education in geology. And, they began to understand the techniques of editing and the grammar of television.

Not Just Kid Stuff

Desktop video is not just kid stuff. Take for example "Prevue Guide" of Tulsa, Oklahoma. "Prevue Guide" provides cable television programming 24 hours a day to local cable TV providers. The "Prevue Guide" national network provides previews and listings of cable TV programming.

Significantly "Prevue Guide" provides two Amigas to each local cable TV service that subscribes to their service. Cable operators receive an Amiga 500 and an Amiga 2000. The Amiga 2000 is configured with a genlock card, and the Amiga 500 is for use by the local cable TV station to do off-line graphics. "Prevue Guide" Vice-President of Marketing and Operations, Chris Bourne notes that the Amiga is necessary for their programming service operation at the local level. The signals are sent via satellite. And the Amiga 2000 is used at the cable station to choose the primary or default preview information, or a default graphics filler that is placed on the viewer's screen. "Prevue Guide" has been working with the Amiga ever since its debut.

Like the professional use of the "Prevue Guide" company, many grant recipients are using their Amigas in school-run television studios. These districts were interested in expanding their studio capabilities. Schools wanted more graphics, animation, screen titling—capabilities they didn't have at their schools.

The variety of applications from the Amiga grant winners is large. Applications include the connecting of a video camera to the microscope, and use the Amiga to make diagrams and labels over the microscopic images. There were also other grant winners intending to use the Amiga for language training, especially since a lot of the software that has been developed for the Amiga involves voice generation. There are applications for teaching German or French. Some software developers have even come out with foreign language programs for the Amiga. Also, there are grant winners who are going to be using the Amiga for "English as a second language" (ESL) classes.

Spreading The Word

Videos produced during the spring from some of the 20 grant winners were presented at the National Education Computing Conference (NECC) held in Boston in July, and at the ITTE Technology Leadership Network Summer Meeting held in Colorado Springs in August. Commodore has also put together a single sample tape showing highlights of the educational applications of the grant winners. Presentations will also be made at NECC in November.

Also in November, Commodore will display the educational videos at still another major conference having the theme, "Making Schools More Productive." The "Making Schools More Productive" conference also includes an exhibition.

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And that's just the beginning. With a solid foundation in electronics behind you, you're ready to build your own powerful data communications system.

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At this point in your training, you're sent the new IBM PC/XT compatible Packard Bell VX88 computer. Following NRI's clearcut instructions, you easily master your computer's powerful operating functions, then move on to build your own complete data communications system.

You begin by programming the RS-232C communications interface built into your computer, giving the Packard Bell the power to transmit data over serial lines. Next you construct a high-quality breakout panel, an indispensable diagnostic tool you use to examine and test the internal workings of your interface.

Then, completing your state-of-the-art system, you power up the 2400 baud modem included in your course and take it through a series of comprehensive tests and demonstrations. In no time, you have a firm understanding of the data conversion system built into your modem, and you're ready to put your system on-line with a world of electronic information.

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- ☐ Electronic Music Technology
- ☐ Cellular Telephone Servicing
- ☐ Security Electronics
- ☐ Digital Electronics Servicing
- ☐ Basic Electronics

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235-109

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the "wrong" line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

"[HOME]" = UNSHIFTED CLR/ HOME	"[PURPLE]" = CONTROL 5	"[F1]" = F1
"[CLEAR]" = SHIFTED CLR/HOME	"[GREEN]" = CONTROL 6	"[F2]" = F2
"[DOWN]" = CURSOR DOWN	"[BLUE]" = CONTROL 7	"[F3]" = F3
"[UP]" = CURSOR UP	"[YELLOW]" = CONTROL 8	"[F4]" = F4
"[RIGHT]" = CURSOR RIGHT	"[ORANGE]" = COMMODORE 1	"[F5]" = F5
"[LEFT]" = CURSOR LEFT	"[BROWN]" = COMMODORE 2	"[F6]" = F6
"[RVS]" = CONTROL 9	"[L. RED]" = COMMODORE 3	"[F7]" = F7
"[RVOFF]" = CONTROL 0	"[GRAY1]" = COMMODORE 4	"[F8]" = F8
"[BLACK]" = CONTROL 1	"[GRAY2]" = COMMODORE 5	"[POUND]" = ENGLISH POUND
"[WHITE]" = CONTROL 2	"[L. GREEN]" = COMMODORE 6	"[SHFT ^]" = PI SYMBOL
"[RED]" = CONTROL 3	"[L. BLUE]" = COMMODORE 7	"[^]" = UP ARROW
"[CYAN]" = CONTROL 4	"[GRAY3]" = COMMODORE 8	

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running". Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazine
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem

Have fun with the programs!

HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL [RETURN] on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT..) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>86200 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

END

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
   :GOTO 30
110 IF T<>59382 THEN PRINT
   :PRINT"MISTAKE IN DATA --> CHECK
   DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
   1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,98,30,04,C9
1041 DATA 06,30,1E,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
```

END

Continued from page 45

ers explore a huge abandoned mine shaft in search of treasure. Fend off ghosts and killer bats while avoiding volcanic vents and fire pits. Gather batteries to recharge your energy pack and dynamite to blast through piles of rubble. Find special keys to unlock gates leading to lower levels (six in all). The atmosphere runs deep and dark in the cavern's convoluted nooks and crannies, rendered in appropriate subterranean hues. A tough but rewarding experience, designed by MicroGraphicImage and Tim Martin.

★★★★ *Stealth* — Beneath this game's stunning 3-D graphics and ultra-smooth animation lurks — surprise! — *Space Invaders*, at the peak of its evolutionary climb. Players skim the surface of an alien planet in their sleek stealth fighters. Your mission is to avoid the multitude of ground defenses — tanks, fighter planes, bunkers and homing missiles — and reach evil Dark Tower. Once in range, a few well-placed shots bring it crumbling to the ground in a spectacular nuclear explosion. Then it's off to the next, more difficult level (five in all). Although the action grows repetitive, the appeal remains constant. One of the toughest shoot-'em-ups around, designed by Tracy LaGrone and Richard E. Sansom.

★★★★ *Karateka* — Jordon Mechner directed this martial arts contest, one of the first to incorporate cinematic techniques in its storyline. Cast as a young karate master, your mission is to infiltrate the fortress of the evil warlord Akuma and rescue your beloved princess. Beautiful graphics and incredible animation more than make up for the tissue-thin plot. Movie-like touches include fades, pans, camera tracking and atmospheric use of music. One of the few action games that actually plays better using keyboard control.

★★★★★ *Whistler's Brother* — Nearly lost in the shuffle, this odd title is perhaps the most under-rated of the "Broderbund Six." Designed by Louis Ewens, players assume the role of brother to Professor Fenton Q. Fogbank, a brilliant but accident-prone archaeologist. Your brother has made a fabulous discovery, but left it behind by mistake. Your job is to backtrack through 13 locations to recover his find. Outstanding features of the game include 208 multi-scrolling screens, a wide variety of special effects, and the challenge of controlling two on-screen characters simultaneously. Solid non-stop frustrating fun. ■

Continued from page 45

Omega Race — This arcade translation from the Bally/Midway coin-op ranked as one of the best releases to bear the Commodore logo.

highly influential in the development of home entertainment software.

Among the game's many innovations was a unique 360-degree field of play. Set in deep space, players were assaulted from all sides simultaneously — none of this single-file, marching in formation silliness. The threats in *Asteroids* were random and unpredictable, thus dangerous and exciting.

The game also released players from their earthly confines — no more sliding and shooting along a fixed horizontal plane. Players were free to roam the screen at will, opening a new world of strategic and graphic possibilities.

★★★ *Omega Race* — 1982, Commodore Business Machines. Who said computer companies can't make decent games? This arcade translation from the Bally/Midway coin-op ranked as one of the best releases to bear the Commodore logo. Perfectly programed to simulate the original's vector graphics, the game was like playing *Asteroids* in a fish bowl. Solid, mindless fun.

★★★ *Survivor* — 1983, Synapse Software. Once inside this volatile video madhouse, life in a fish bowl sounds pretty darn good. Billed as the first true multi-player cooperative game, *Survivor* was *Asteroids* with a purpose. Deep in the heart of an uncharted asteroid belt lie four heavily defended fortresses of the Xenogryph fleet. Your mission is to penetrate the outer shields, disable the automated gun emplacements and destroy each fortress' command center. Xenogryph warriors attack unexpectedly, usually at the worst possible moment. Seven levels of play await in this extremely difficult game, which boasts mind-blowing graphics and non-stop action. Designed by Richard Carr, translated to the 64 by Peter Adams (*Blue Max*, *Zaxxon*).

★★ *Astro Chase* — 1983, First Star Software. Designed by Fernando Herrera (*Flip-Flop, Bristles*), this variation of *Asteroids* brought the battle closer to home. In the game, Earth is threatened by 16 floating space mines planted by the evil Megard Empire. Players patrol the Milky Way blasting the mines while fending off errant Megard defenders. Colorful, compact graphics highlight this contest, including an impressive planetary explosion if you run out of time. Hampered only by goofy joystick controls — the results of an admirable, but failed experiment by Herrera.

★★★ *Space Pilot* — 1983, Kingsoft. Like a dusty treasure found in an old curio shop, this obscure title from tiny company turns out to be a real collector's item. Essentially an unauthorized home version of the arcade sensation *Time Pilot*, the game plays more like the real thing than a rip-off. Using joystick or keyboard controls, players must blast wave after wave of swarming enemy aircraft. Each level moves the player forward in time to face new technology, beginning with World War I-era biplanes, moving on to confrontations with Spitfires, helicopters, jets and flying saucers. A little repetitive, but entertaining.

★★★ *Shamus* — 1983, Synapse Software. This maze exploration game falls into the *Asteroids* category due to its trigger-happy 360-degree play mechanics.

Space Taxi — Simply one of the best home arcade games ever made.

One or two players struggle inside a huge multiscreen labyrinth in search of The Shadow. It's non-stop insanity from start to finish for those who can take it. Followed by the more inventive *Shamus: Case II*, both designed by William Mataga (*Mindwheel*).

★★★★★ *Space Taxi* — 1984, Muse Software. Simply one of the best home arcade games ever made. Designer John F. Kutcher (*Rescue Squad*) rigged a tiny taxi cab with 360-degree thrusters (borrowed from *Asteroids*), added the effects of gravity, and created a classic. Players drive the space taxi about the screen, pick up passengers on one level and deliver them to another. Big tips are earned for speed and smooth landings. Each of the 25 screens feature an obstacle course of wild and wacky designs, from black holes and meteor showers to moving walls and deadly magnets. Player controls are tight and responsive. They have to be — even the slightest collision sends the taxi screaming to the ground in a flaming yellow ball. Using primitive but effective voice synthesis, fares order the taxi from one landing pad to another. "Hey, taxi!" they shout

belligerently. "Pad five, please," they grumble upon arrival. Fasten your seatbelts, this is one heck of a ride.

Get Your Wings

Released in 1980, *Defender* turned the *Space Invaders* shooting spree on its side and took the show on the road. Instead of staking out the same old dreary piece of terra firma, *Defender* treated players to a rollicking ride on the horizontally scrolling, wrap-around playfield. The game was fast, furious and more than a little violent. The object: Rescue stranded humanoids while riding hellbent through what amounts to alien stew. Use lasers to blaze away to the left and right, or trigger a smart bomb to annihilate the immediate surroundings.

> While *Choplifter* was deadly cute, this one was just plain deadly.

Not surprisingly, Atarisoft's home version of the game was a dismal failure. It wasn't long, however, before creative computer artists developed new scenarios based on *Defender* play mechanics. To this day, it remains one of the most popular styles of arcade design.

★★ *Lunar Leeper* — 1981, Sierra On-Line. One of the earliest *Defender* clones for home computers to exhibit a personality of its own. Players rocket around the barren lunar landscape in search of colonists to rescue. Your nemeses in the game are odd little cyclops creatures with legs like Michael Jordan. Once overhead, the creatures spring into action, attempting to slam-dunk your ship. The graphics are sparse and colorless, and the action fairly repetitive, but it's worth seeing just for the realistic animation of ol' crazy legs.

★★★ *Nova Blast* — 1982, Imagic. In many ways, this creative *Defender* clone outshined the original, partially because it was easier to play. The standard stuff was here — wrap-around playfield, radar screen, waves of nasty aliens — along with several colorful enhancements. Players were assigned to protect four oceanic cities from alien attack. As the defense shields of one city weakened, alarms would sound. Players would then zip over, clear the area and recharge the shields. The game was one of the first to feature variable-scrolling foreground and background graphics, an eye-popping 3-D visual effect. Originally released on videogame format as a sequel to the Imagic game *Atlantis*.

★★★★ *Choplifter* — 1982, Broderbund. Another case of art imitating life, this Dan Gorlin classic was inspired by the 1979 failed rescue attempt of U.S. hostages in Iran. It has since become one of the best-selling computer games of all time, and one of the oldest in Broderbund's product line. In the game, 64 innocent people have been taken hostage, held in army barracks by the Bungeling Empire. Your mission is to pilot a helicopter behind enemy lines and bring 'em back alive. Tanks, jets and floating air mines hamper your success. To hard-core shoot-'em-up fans, the game's play mechanics are simple, even tedious. The hook lies in the realistic animation and subtle, yet stylish programming effects. To free the hostages, for example, you must first blast open the doors of their prisons. Tiny people then stream out into the open, waving for assistance. Drop them off back at base and they stop to salute you. Still popular today, an enhanced coin-op version of the game has recently been released.

★★★★ *Fort Apocalypse* — 1982, Synapse Software. The flip-side of the coin. While *Choplifter* was deadly cute, this one was just plain deadly. Piloting a sluggish helicopter that seems just slightly too big for its surroundings, players must blast, bomb and inch their way to the bottom of a complex underground fortress. Once there, rescue your trapped comrades and destroy the fort's command center. Among the perils faced along the way are renegade helicopters, tanks, mines, laser emplacements and "hyper-energy" chambers. A fiendishly difficult game, but highly rewarding. Designed by Steve Hale and programmed for the 64 by Joe Vierra (*Shamus II*).

★★★★ *Repton* — 1982, Sirius Software. Described by the company as a "killer game" — score one for truth in advertising. This definitive *Defender* clone, designed by Dan Thompson (*Zone Ranger*) and Andy Kaluzniacki, actually surpassed the original in several major areas. Players patrol the ruins of their home planet, encountering powerful waves of alien invaders who are attempting to build a home base there. The aliens come in many deadly varieties, each with unique characteristics. Your swift Armageddon fighter boasts an automatic cloaking device (when thrusters are disengaged), rapid-fire plasma torpedoes, and smart bombs. As if that wasn't enough, a second scenario leads players through a treacherous underground tunnel. Survive swarming alien defense systems to destroy the main power generators. Features bright, colorful graphics, smooth animation and responsive joystick control. *Repton* will leave you breathless.

> What would happen if you made a three-dimensional *Defender*, tilting the action at an elevated 45-degree angle? In 1982, the answer was *Zaxxon*.

★★★★ *Zaxxon* — 1983, Synapse Software. What would happen if you made a three-dimensional *Defender*, tilting the action at an elevated 45-degree angle? In 1982, the answer was *Zaxxon*, without a doubt the most beautiful, innovative coin-op of its time. The game's 3-D graphics threw some players for a loop. Suddenly they were required to view things from a new perspective and learn odd, cockeyed joystick controls. The system caught on and the game took off, becoming an instant classic. Although several software companies released translations of the game, most critics agree Synapse's 64 version, designed by Peter Adams, is the most faithful to the original coin-op. Blast your way through the many fortresses of Asteroid City, surviving deadly deep space dogfights, to face off with the powerful robot Zaxxon. Adams even added a special "mystery" fortress, not found in the coin-op version. Does it get any better than this? You bet —read on.

★★★★★ *Blue Max* — 1983, Synapse Software. In a nutshell, everything *Zaxxon* did, *Blue Max* did better. Designer Bob Polin kept the 3-D graphics and diagonal scrolling playfield, but traded the spaceship for a World War I biplane. After takeoff, pilots must shoot down enemy aircraft, bomb ground and water targets, strafe tanks and gun emplacements, then land safely for repairs and refueling. Keep track of altitude, speed, fuel and damage while attempting to advance to higher stages of the game. Although the graphics seemed simple compared to *Zaxxon*, they were much more interactive, buzzing with activity. Boats chugged up the river and little cars tooled along the roads in this miniature world. Expert pilots could even fly under the bridges to earn bonus points. A true classic, programmed for the 64 by Peter Adams. Polin later tried for a sequel and failed, with *Blue Max 2001*.

Games To Make You Climb The Wall

Just as *Pac-Man* gave players tunnel vision, *Donkey Kong* made them jump for joy. This popular Japanese import thrilled players with its courageous theme (rescue your sweetheart from the mean beastie), swift action and no less than four play screens (a fabulous achievement at the time). *Donkey Kong* soared to the top of the charts.

Just as *Pac-Man* gave players tunnel vision, *Donkey Kong* made them jump for joy.

It didn't take long for designers to create a new genre of ropes 'n' ladders games for the home screen. Many of these early efforts remain some of the most creative and challenging action contests to ever grace the computer screen. Climbing games were pushed out of vogue in 1985 by players hungry for more sophisticated entertainment. Ironically, these same games are now the mainstay of a booming videogame market. *Super Mario Brothers*, however, would faint dead away if confronted by these veteran video athletes.

★★★★★ *Lode Runner* — 1982, Broderbund. This Doug Smith creation is considered by many to be the best computer game ever made. I'm inclined to agree. The game marks the debut of Broderbund's infamous Bungeling Empire, a dastardly race of computer bad guys who would reappear often in the company's software lineup. Your mission, as Galactic Commando, is to infiltrate the Bungeling treasury rooms, evade the guards and make off with every gold chest stolen from your people. Each room was an inventive architectural puzzle — platforms, landings, vaults and mazes of ingenious design. Your only weapons were fleet feet, cunning and a portable laser drill, used to penetrate sections of the red brick structure. Whether you dig for gold, create escape routes or trap careless guards, time is a factor — the holes fill back up within seconds. Sixteen levels (screens) were available in cartridge format, while the disk version contained a whopping 150 screens (eat your heart out, *Donkey Kong*.) A built-in construction set, one of the first of its kind, assured long-lasting play value. This feature eventually led to the sequel, *Championship Lode Runner*, offering 50 near-impossible challenges created by fans of the original.

★★★★★ *Jumpman* — 1983, Epyx. The video version of popcorn — one taste and you just can't stop. Designed by Randy Glover (*Summer Games*), this running/jumping contest featured non-stop action that would be copied often, but never duplicated. As in *Lode Runner*, players scrambled to collect on-screen items (in this case, terrorist bombs) while avoiding the enemy. From here the comparisons end. While *Lode Runner* played to strategists as well as action fans, *Jumpman* went straight for the central nervous system. The title character was a nimble little guy, capable of spanning great distances in a single leap, often making fingertip grabs on the other side. The game's simple girder system, connected by ropes and ladders, was his natural playground.

Lode Runner played to strategists as well as action fans, *Jumpman* went straight for the central nervous system.

Unlike his lode running cousin, however, even the tiniest fall spelled disaster. Thirty screens offered a hair-raising assortment of perils: floating elevators, spontaneous fires, disappearing floors, robots, dragons and vampire bats to name just a few. Players also had to dodge a never-ending hail of bullets, fired by a mysterious off-screen enemy. No rest for the weary in this bona fide classic. Followed by *Jumpman Junior*, featuring 12 more devious screens, released in cartridge version only. Glover's marvelous creation would later inspire Progressive Peripheral's equally good *Wizard*, which also contained a construction set (currently available through Electronic Arts as *Ultimate Wizard*).

★★ *Miner 2049'er* — 1983, Reston Publishing Co. Originally conceived as a coin-op, the major manufacturers didn't think it would sell. When released on the home market, however, the game quickly became a runaway best-seller. Players control Bounty Bob as he hunts for Yukon Yohan through 10 levels of an abandoned uranium mine. Although quite popular at the time, today the game's blocky graphics and infuriating player control leave much to be desired. Memorable for its strong impact on the industry.

★★ *Squish 'Em* — 1983, Sirius Software. A juvenile *Crazy Climber* knock-off by designer Tony Ngo. Features large, colorful graphics, but a challenge that soon becomes tedious.

★★★ *Spy's Demise* — 1983, Penguin Software. This addicting little game, designed by Alan Zeldin, proves you don't have to be fancy to be fun. Using the keyboard, joystick or paddles, players climb to the top of a building by simply walking from one side of the screen to the other. The hard part is avoiding the seven deadly elevators in between, each moving at different speeds. That's all there is, but with 10 levels of play, it somehow never gets boring. Bouncy, atmospheric music also spices up the action in this minor hit.

★★ *Dino Eggs* — 1983, Microfun. A primordial arcade oddity designed by David H. Schroeder. Ecology-minded players travel back in time to rescue and hatch dinosaur eggs. There's lots to do in this multilevel game, but in the end there's too much work for too little reward.

★★ *Sammy Lightfoot* — 1983, Sierra On-Line. Sammy's a circus performer who's put through the ringer in a multitude of hazardous scenarios. Designer Warren Schwader constructed some inventive challenges, but the fun quickly turns to frustration due to Sammy's limited movements and dismal joystick control.

★★ *Mountain King* — 1983, Beyond Software. Journey to the base of a volcanic maze to recover the spiritual flame. This Robert Matson design featured clever use of sight and sound: The music grew louder as you neared the flame, which was visible only in the beam of your magic flashlight. Nice idea dragged down by stiff joystick action and sloppy character movement.

★ *Hard Hat Mack* — 1983, Electronic Arts. More platform and girder action, but not much fun. Designed by Michael Abbot and Matthew Alexander, this *Miner 2049'er* copy did little more than take up retail shelf space. Players battle on-the-job hazards and OSHA representatives, who should have levied a fine for the game's substandard joystick controls.

★★ *The Heist* — 1983, Microfun. Heavily promoted, but largely ignored, this one casts players as thieves locked overnight inside a huge art museum. Search for booty as you out-smart robot security guards, force fields and alarms. What should have been barrels of fun is somehow unsatisfying. The game did predate Epyx's classic *Impossible Mission*, however, and for that we owe it a nod.

★★★ *Zombies* — 1983, Bram Software. This game belonged as much in an art gallery as it did a computer screen. Designed by Mike Edwards, with obvious inspiration from fantasy artist M.C. Escher. Players scramble through a myriad of bizarre dungeons featuring fantastic imag-

ery and eye-popping optical illusions. Vile creatures literally pop out of the woodwork to greet you, then eat you. Unfortunately, crude animation and sluggish player controls nearly ruined the game's aesthetic values. Re-released in 1984 through Electronic Arts as *Realms of Impossibility*.

★★★★ *Trolls and Tribulations* — 1984, Creative Software. Jimmy Huey's multiscreen extravaganza still ranks as one of the best kept secrets of the genre. Players traverse a vast underground sewer system in search of treasure. Battle subterranean creatures and solve brain-teasing puzzles in this colorful arcade classic. The joystick controls are irritating, but well worth enduring. A genuine collector's item.

★★★ *Montezuma's Revenge* — 1984, Parker Bros. More underground shenanigans, this time south of the border. Players control an Indiana Jones-style adventurer (who looks more like a watermelon with legs) through dozens of action-packed screens. Extra-large, colorful graphics show off the game's endless parade of sinister pitfalls. Solid entertainment.

★★★★ *Mr. Robot's Robot Factory* — 1984, Datamost. This is the game *Miner 2049'er* wished it could be. Players guide the title character up, down and around 26 screens filled with conveyor belts, trampolines, explosives and nasty critters. If that's not enough, use the fool-proof construction kit to make your own. Designer Ron Rosen would later attempt to repeat his success with *Polar Pierre*, but netted only mixed results.

★★★★★ *Sword of Kadash* — 1984, Penguin Software. A deft mix of arcade action and fantasy role-playing, designed by Chris Cole and Dynamix. Players explore the ruins of a vast underground empire in search of the title weapon. Step gingerly to avoid hidden traps, ghosts and evil guards. Over 250 screens of ingenious puzzles and deadly challenges. A rare gem.

★★★★ *Bruce Lee* — 1984, Datasoft. The first, and best, in Datasoft's series of home arcade games starring renowned adventure heroes. Notable for an excellent blend of action (running, jumping, fighting) and puzzle solving skills. The slick graphics and crafty screen designs enticed players to explore what lies beyond. Followed — in style, but not in spirit — by *Zorro*, *Conan* and *The Goonies*.

★★★★ *Lode Runner's Rescue* — 1985, Synapse Software. This one stretches the *Lode Runner* legacy just a tad far. As Alexandra, Lode Runner's daughter, players must outwit the Bungeling Empire and rescue her famous dad from a prison cell deep within a 46-level maze. What sounds perfectly awful on paper turns out to be a surprise hit. Designed by Joshua Scholar, the game features colorful, interactive 3-D graphics and lively animation. Also includes an easy-to-use construction kit for designing your own screens.

The Good, The Bad and The Weird

As software designers became more sophisticated, they began to branch out and blaze new trails. The line between arcade games and home entertainment continued to widen. Computer games no longer fit neatly into pre-selected categories. Some of the best simply defied description. Here are just a few of the early games that boldly went where no pixel had gone before.

> Metaphysical or just plain dumb? The sequel, *Fish?* never materialized.

★ *Worms?* — 1983, Electronic Arts. Okay, so innovation isn't everything. Less of a game than a computerized art show, this was a failed experiment in non-contact, non-participatory software. Metaphysical or just plain dumb? The sequel, *Fish?* never materialized.

★ *Moondust* — 1983, Creative Software. More stream of consciousness nonsense, designed by Jaron Lanier. Interesting for about two minutes — after that, a proven cure for insomnia.

★★★ *Gumball* — 1983, Broderbund. A game even parents can love. Passive and non-violent, Peter Cook's design enlists players' help in a gumball factory. Direct the colored balls into their rightful bins via a complex mechanism of tubes, valves and lifts. Subtle, maddening fun.

★★ *Drelbs* — 1984, Synapse Software. Six years later and I'm still trying to figure this one out. Players wander about an abstract maze, flipping turnstiles to form boxes. Meanwhile, little creatures go about undoing your handiwork. Interesting graphics, but little else to recommend this Kelly Jones design.

★★ *Necromancer* — 1984, Synapse Software. This one makes more sense, but not by much. Players control a Druid, whose job is to plant magical trees, organize them into an army and destroy vaults filled with spider larvae. Hey, I don't make this stuff up. Nice graphics and animation, but just when you think you've caught on, the game becomes boring.

★★ *Ballblazer* — 1985, Epyx. One of the first efforts by Lucasfilm Games (*Strike Fleet*), this first-person futuristic soccer game should have been better than it is. The narrow split-screen effects doesn't help the confusing action as one or two players man their "Rotofoils" and scramble aimlessly about the 3-D checkerboard screen. Not much fun.

★★★★ *Chipwits* — 1985, Epyx. What at first looks to be a slightly silly child's game turns out to be a powerful learning tool, designed by teachers Doug Sharp and Mike Johnson. Users instruct tiny robots to sing, dance, play and carry out tasks, using "programs" of their own design. Teaches ideas such as comparison logic, program flow, memory stacking and debugging — through IBOL (Icon Based Operating Language). One of a kind.

★★ *Little Computer People Project* — 1985, Activision. Another pseudo-game, popular simply because it dared to be different. Designer David Crane (*Ghostbusters*) concocted what amounts to a computerized doll house. Users sit and observe a little computer person go about his daily activities in the tiny three-level house. They talk on the phone, watch TV, listen to records, walk the dog, go to the bathroom (in private) and generally make you wonder why you're wasting your time watching them. A cute gimmick, but nothing more.

★★★★★ *Mind Mirror* — 1986, Electronic Arts. Welcome to the future of computer entertainment. Designed by the infamous free thinker, Dr. Timothy Leary, this excursion into the deep recesses of the psyche is about as close as you'll ever come to achieving an altered state of consciousness through your computer screen. Is it real or merely a cosmic joke played by one this century's greatest court jesters? Open up your mind and discover yourself. Utterly fascinating.

★★★★★ *Alter Ego* — 1986, Activision. Forget dungeons and dragons — this is by far the best fantasy role-playing game ever devised. Designed by Peter J. Favaro, Ph.D., this icon-driven text game comes in two versions — male and female —and allows players to live their fantasy life, from birth to death. Take a path similar to your own life, or become the person you've always wanted to be. Experience things you always wanted to do — even change gender —but prepare to account

for your actions. This game is thoughtful, funny, sad and frightening — just like life, come to think of it. Probably the most important program Activision has ever published.

Does Life Go On?

If you'll notice, most of my descriptions in this article are written in the past tense. As a computer game enthusiast, the reason for this is both shocking and sad: With few exceptions, none of these games are currently available to consumers, not at any price. They are gone. Period. End of story.

Not hardly.

At the beginning of this article I compared the software industry with the music and movie industries. I mentioned being able to view classic movies or listen to vintage music, regardless of age. As consumers in an open marketplace, it's a freedom we often take for granted.

How would you feel if you could never watch *The Wizard of Oz* or *Citizen Kane?* What if you were told you could never enjoy reruns of *The Outer Limits* or *Bonanza?* What if you could never experience the magic of Buddy Holly or The Beatles?

> Computer software design is art, pure and simple.

You'd feel cheated, of course. Who cares if *Citizen Kane* is nearly 50 years old? It's considered by many to be the finest American film ever made. *Bonanza* is hardly prime-time material anymore, yet it's an important part of television history. Buddy Holly will never again top the charts, but he remains a cornerstone of our musical heritage. These films, records and TV series are creative works of art and should be preserved for future generations to enjoy. No one can argue with that.

Computer software design is art, pure and simple. Yet these classic works of art, some barely three years old, have simply vanished from existence. Granted, computer games play to a much smaller audience than movies, music and TV, but this alone does not justify such an early extinction.

Some argue that these early software titles are much to crude to compare with today's 16- and 32-bit technologies. In most cases this is quite true. By the same token, however, you don't extinguish the collective works of Buddy Holly simply because recording technology has drastically improved. You don't pull the plug on "Singing in the Rain" just because of advances in cinematic techniques. Instead, you preserve and cherish these works of art for their historic and aesthetic importance.

Why is computer software different? Why are software companies in such a hurry to discontinue products from their inventories? Part of the answer lies in the nature of the beast. From its inception, the computer and software industries have moved along at a much faster clip than their contemporaries. Hundreds of companies vie for a growing — yet still proportionally small — market. Only the strongest, most up-to-date companies survive.

"It's really an issue of survival," states Trip Hawkins, president of Electronic Arts. "We've tried really hard to keep our products available, to keep them alive." But in the case of older titles, from the obscure (*Standing Stones*) to best-sellers (*M.U.L.E.*), business over-rules sentiment. "It's simply of matter of economics," he continues, "we must go by the retail demand.

Hawkins points one finger at the lack of standardization in the hardware market. "Every few years, people want to buy a new flavor of hardware," he observes, "forcing retailers to go with new machines, perpetuating the cycle (of obsolescence)." Indeed, if the music or video industries dealt with as many changing formats as the software industry, their catalogs would be significantly smaller.

How do the software artists feel about their "orphaned" software? Much to my surprise, most that I spoke to treat it as water under the bridge. They enjoyed a brief shot in the spotlight, made their money, and quickly moved on to new projects.

"I don't really have bad feelings about it," says Garry Kitchen, president of Absolute Software and author of such titles as *Gamemaker* and *The Designer's Pencil*." "Business is business," he states matter-of-factly, adding, "I think it's unfortunate that new (users) have a hard time getting their hands on some older titles, but it's a real tough problem to rectify."

Solutions aren't easy to come by. Software companies could attempt to cash in on the nostalgia factor, if it proved a viable undertaking. Several companies already offer older titles re-released under budget labels, usually selling for a fraction of the original cost. Activision, for example, has expanded its Solid Gold line to include such titles as *Pitfall, Star Rank Boxing* and *Star League Baseball* on special "flippy" disks. Most companies have followed suit in one way or another. Some, such as Mindscape, will often purchase the publishing rights to other companies games and re-release them under a new label.

> Like it or not, most of these discontinued titles remain alive today only through piracy networks.

To the end user, whose passion for their computers fuels the fire, the solution lies in public domain software. David Bradley, Software Coordinator for Public Domain Solutions based in Tallevast, Florida, couldn't agree more. "If a software company has given up on a title," he says, "why not place it in the public domain?" Bradley regularly receives requests for out-of-print titles. "There's nothing I can do," he laments.

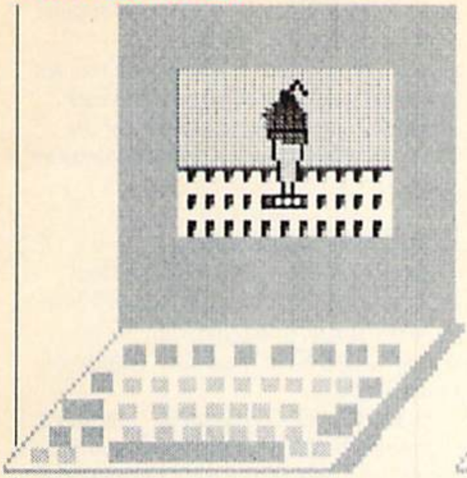
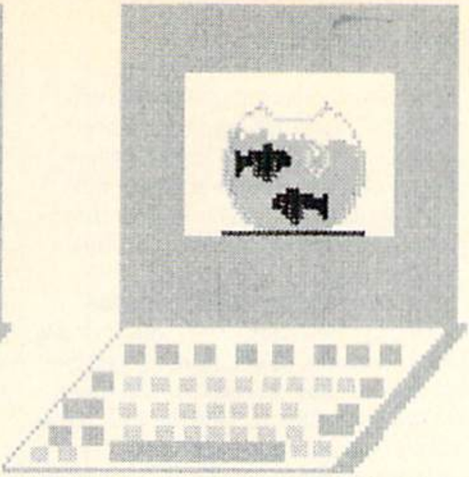
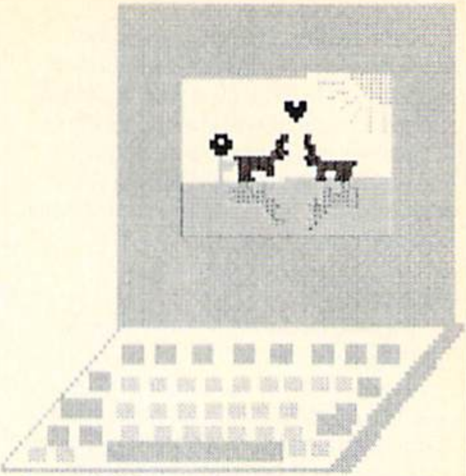
The biggest stumbling block to releasing some commercial software into the public domain is documentation. Although many early games could get by with minimal on-disk instructions, some of the newer titles rely heavily on printed manuals and items that cannot be easily reproduced electronically.

One final solution — which many contend is actually a large part of the problem — is software piracy. Like it or not, most of these discontinued titles remain alive today only through piracy networks: clubs, electronic bulletin boards, etc. The percentage of software pirates genuinely interested in preserving computer games as artistic statements is admittedly small, if nonexistent. Most are rampant collectors and electronic outlaws, not true crusaders.

Do software companies turn new users into pirates? If a company has no use for a discontinued product, and has no intention of ever offering it for sale again, should they be pressured into dropping the copyright and release it into the public domain? Is it wrong to make copies of an orphaned piece of software from a company that doesn't even exist anymore? These are hard questions that must eventually be answered. There are no easy legal or moral solutions.

For now all we can do is remember with great affection these heroes of another era, and promise to keep their memories alive, somehow, for future generations to enjoy. This, they will think, was where the magic began.

A Road Less Traveled

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to provide hands on instruction in computer graphics for children.

Meredythe and her volunteer co-workers show children how to use a computer while emphasizing that it's a non-aggressive tool. "I don't believe children should be learning war and I don't like computer games that are primarily used to encourage violence" she says.

She introduces children to an "alternate way of thinking about humanity, about this planet and maybe how to help save it." While championing non-violence and environmental sensitivity she simultaneously describes future career opportunities in show business.

In the 12 weeks her pilot programs runs at each school, students design graphics emphasizing recycling and promoting other environmental issues as they learn about producing commercials, storyboarding, acting and what it's like to be on a movie set. A standard assignment is for children to provide computer graphics to illustrate one of Meredythe's songs, "The Recycle Rap."

"I want to get kids hooked on computers like the Amiga so they can use graphics and animation to help build their lives instead of tearing it down with hostility and drugs", she says.

Examples of computer graphics created by Meredythe's students will be on display in the September, 1988 joint Soviet-American Children's art exposition in San Diego. With its theme of The Greatest Treasure of Them All: Friendship, the exhibit features 300 pieces of art from students in San Diego and Tbilisi, Georgian Republic, USSR. Mothers Embracing Nuclear Disarmament (MEND) serve as the international exhibit's co-sponsor.

Wavering between idealism and realism she insists that her Arts and Technology group will, in a small way, counteract the destructive effects of firms like Nintendo who she identified as the archetypical firm that encourages violence through technology.

Meredythe recognizes what's been observed so many times before about kids and computers: kids are not intimidated by the technology. Unlike adults, children are curious and want to experiment. "People say 'Oh, computers are scary.' Well computer aren't scary, a chain saw that can cut off your leg, that's scary."

At times Meredythe sounds like a pacifist blending the doctrine of the 1960's with the issues and technology of the 80's. Instead of the 60's flower children slogan "Make love, not war", however, this contemporary environmentalist exclaims "Make art, not war."

While some might find fault with her compelling ethics of non-aggression, few would question her insistence on preserving the environment, and the interest she takes in kids who statistically have less than an even chance at achieving success.

"I work with underprivileged kids because they are deserving. They deserve better than they have. So I say to them: do you want to be a film star, a movie director, a computer artist? Then... you can."

Against All Odds

Continued from page 41

driving fifty miles to see that sentence. Ever since then, she says, "computers have instilled in John an excitement about living, it's as if he says 'I have ideas I want to get out' and now I can." "Computers" she adds, "opened up his whole world."

John now has reasonable access to a computer during the school day but opening the channels was not easy. "We met obstacles in trying to get him access to computers", notes Molly obliquely referring to budget constraints. While her attempts to locate a computer for John to use were at times frustrating, the results were worth the effort.

According to Molly, specially equipped computers have evoked major changes in John's life, specifically his ability to communicate. "Communication is the prime reason for getting him onto computers, now he can communicate with the world around him. Computers provide him with badly needed sense of achievement," she says.

For John the computer's not merely a machine but passage into a world he been denied access to. "For a physically handicapped child, such as John, there are not many opportunities to play. Playing is an important part of a child's day," Molly explains. "If you can't play you cannot learn how your body works. And there's many other things you miss, things like social interaction."

One key to success in working with handicapped children is to recognize a child's permanent limits and work within them. Molly's pragmatic. While she realizes a computer will open some doors for John, others will remain forever closed. But what a computer can't remedy it can sometimes ease.

"Many of these kids will spend a lot of time by themselves. These children need a computer to play with. For them it's a tireless friend to provide excitement, impart knowledge and unleash the imagination..."

What does John's future hold? Pam Hensley's optimism swells to reflect a mother's hopes. "He's strong and self confident, he would like to write a book about his experiences to help other people who face a similar challenge of daily existence."

Molly envisions the day when John will have a portable computer providing voice synthesis. "He could go to McDonalds to order his lunch, it will change his life (author's note: she means the computer not the lunch). The quality of his life will improve so much then it will be almost unbelievable".

Melinda

"Success means trying my very best and never giving up."

Fifteen years old and confined to a wheelchair, Melinda Housh also suffers from cerebral palsy resulting in visual impairment and fine motor control. Not many people would describe Melinda Housh as fortunate, but compared to many cerebral palsy victims she is.

Although she's in the eighth grade at Bedford Junior High, her writing ability remains fixed at that of a four year old. Since Melinda is legally blind and motor impaired she requires a computer to create written communication.

Melinda possesses satisfactory reading and vocabulary skills as well as good verbal skills. Even with her mother, Kay, helping with the handwriting, Melinda often spends three hours a night doing homework to maintain her B+ average. To go it alone, Melinda requires a word processor for writing.

Often, children with cerebral palsy are viewed as retarded, a false perception. For Melinda, a computer provides an opportunity to prove to her classmates she's capable and intelligent. Her classmates "sometimes think the work I turn in isn't mine", Melinda says. "They think because my mother writes it, that she does it too." For emphasis Kay Housh adds "She passes her tests in school when I'm not there, so that shows that she can do the work."

Molly sees Melinda, who also suffers from asthma, as a fighter, a survivor. "Although it looks like things come easy for her, every day is a constant struggle. Still, success for Melinda is ongoing, she'll continue to experience achievement with computers. Computers will open up opportunities that would never otherwise be there for her."

In time Molly predicts, Melinda can achieve self sufficiency.

What's Melinda's long term goal? She wants to be a reading teacher, and Molly feels she can do it. As it is with so many other aspects of Melinda's life, Molly cautions, reaching that goal will be a long uphill climb but the top is worth every step.

The Computer Learning Foundation

Continued from page 41

One way to make teachers more efficient is "To avoid having them reinvent the wheel", according to Sally Bowman, director of the CLF. With the right kind of resources, teachers can build upon the experiences, failures or successes of other people.

"Teachers often ask the same questions", says Bowman. "They want to know about successful programs developed by teachers in other schools that share similar objectives." For its part the CLF hosts seminars, supplies speakers and produces educational videotapes. They also publish a series of low-cost, easy-to-understand booklets, one group for parents and students the other for use by teachers.

Selected form the 1,000+ entries to the CLF's 1987 Teacher Lesson Plan Contest, the educators' series of books consist of classroom tested lesson plans. They include grade level recommendations, materials checklist as well as a step by step activity and procedure guide. Lesson plans usually require no unusual or exotic equipment.

Lesson Plans For K-5, 6-8, 9-12, Edition 1

The Grade K through 5 collection offers 60 one page lesson plans in six disciplines (art, computer competency, language arts, mathematics, science and social studies). K-5 gently introduces students to computers and explains how computers are used to portray, classify, sort, and obtain a wide range of information. The lesson plans range from designing spider webs to classifying rocks to budgeting for Christmas shopping.

The Grades 6 thru 8 booklet uses a similar format but introduces increasing challenge and complexity. Projects range from researching a family tree to designing a car to creating a music video.

In addition to the basic disciplines found in the earlier grades, the Grades 9-12 lesson plans introduce business, foreign languages and a section on special education. The scope and challenge of the activities increase significantly while remaining mindful of the older students' environment and interests. As a result, projects include establishing a computer dating service, exploring career opportunities and creating a more utopian world.

Diligent parents can adapt some of the K through 5 booklet plans for home use. Most of its lesson plans, however, are better suited to a formal education environment. Lesson plans for grades 6 through 12 are best used in schools.

Depending on the quantity ordered, lesson plan books cost $4.00 to $5.00 each. Edition 2, summarizing the best of the 1988 contests will be available in October 1989.

Booklets For Parents

For parents, the CLF publishes two smaller booklets, "Everything You Need to Know About Computers but Were Afraid to Ask Kids", and the "Family Activity Guide".

As the title of "Everything..." promises, it answers basic questions about computers. What's software? RAM? Peripherals? What kinds of software is available? In other words, questions that parents (and teachers) should know the answers to but may not. "Everything..."'s an easy reading crash course in computer terminology and theory and it presents persuasive reasons why you might want a home computer for your child.

The "Family Activity Guide" offers more than 50 solutions to the "OK we bought a computer, now what can we do with it?" question. The guide pinpoints projects kids can work at independently or with family members. When specific programs are required to accomplish the task, the Guide lists the program's name and publisher.

For Students

"Preparing For a Career in the 21st Century" provides examples of people using computers in traditionally non-computer fields such as music, agriculture and medicine. High school and college students echoing the age old lament of students everywhere "Why do I need to know this (computer) stuff?", will find their answers here.

The CLF's non-technical, easily-digestible explanations simplify obtaining a working knowledge about what goes on under the hood. In addition to learning the technology and terminology, you owe it to yourself, your students and your children to learn more about what computers do and what they can do.

Copies of the books for parents and teachers are available at cost and in bulk. The CLF's purpose is to disseminate ideas and solutions; they want to hear from schools, educators, parents and students. Take advantage of their programs, request their literature or enter the contests. Write the Computer Learning Foundation at PO Box 60007, Palo Alto, CA 94306-0007.

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mented. The bottom line is that affordable hardware with the potential to help handicapped persons acquire an equal lifestyle is in place waiting for the talented programmer to supply the software.

For other handicapped people the device which will minimize their restrictions may be a graphics tablet, lightpen or simply a joystick. The important fact is not which device or software makes the difference but simply that they are available. And if developments go as expected, in the near future voice-recognition software and hardware will be added to the arsenal of computer aids which will give the handicapped users another equalizing edge.

Making A Difference

During a tour of a hospital which specializes in rehabilitating patients suffering from spinal injuries I was shown a "language board" which they use. It was developed because some of their patients are both demobilized and have difficulty speaking. For them this board allows a simple but effective way to communicate their needs. By pressing a switch located near their hand they can cause a bulb on a picture to light, telling the staff things like they are hungry, thirsty, in pain, etc.

Unfortunately, because the boards are not produced in large quantities, they are relatively expensive (around $800 each) and limited. I suggested a more affordable solution would be the use of inexpensive 64's (under $200) and a simple BASIC program which could display the same information (not to mention the ability to alert the staff with audible signals). Hooked up to an inexpensive monitor or TV, such a system would offer comparable features with flexibility. They are considering this approach, but like most industries, hospital staffs are so busy meeting the daily requirements of the job, they don't always have the time to explore new solutions.

This is where the 64, 128 and Amiga enthusiasts could make a tremendous contribution to the lives of the handicapped while putting their interests and abilities to work. If every user group would "adopt" an institution or handicapped individual and develop just one "Equalizer" project per year, the quality of living for handicapped individuals in their community, in just a few years, could be improved many fold. Rarely a month goes by that I do not meet at least one computer owner who confides his enthusiasm about his system's potential, but can't really justify its use. To those I suggest they contact their local hospital or nursing home to offer their services. I'm convinced that when administrations see a demonstration of how some of their patients can be helped with a system as inexpensive as the 64 they will embrace the technology—and probably the computer enthusiast who opened their eyes to the potential.

No Educational Barriers

In our May 1987 issue I reported on the ability to attend college-level classes electronically—with a computer and modem. One of the services we covered is called the Electronic University. By subscribing to this network, students can, with the assistance of their Commodore computer, earn credits toward a college degree without having to attend any classes on campus. For the handicapped person, such a service can be the equalizer which gets them to class on time, regardless of their physical limitations.

Thankfully, more networks and organizations are sprouting with the potential to really help the handicapped stay in the mainstream of life—most with computer aid.

One of the most aggressive organizations devoted to helping the handicapped is appropriately called Closing The Gap. Founder Bud Hagen says he began CTG for personal reasons—to help his deaf son. Since then the organization has grown and responded to the needs of thousands of other similarly handicapped people. In addition to printing a bi-monthly newspaper the sole purpose of which is to inform and assist the handicapped community, CTG sponsors workshops designed to put the power of computers into the hands of those who can benefit most. These workshops range from generic subjects like introducing computers to new owners to more specialized topics like using the "microcomputer in the rehabilitation of neurologically impaired adults."

Two other organizations, R.E.A.C.H. (Rehabilitation, Education and Advocacy For Citizens with Handicaps) and C-CAD (Center for Computer Assistance to the Disabled) have recently joined forces to help the handicapped, primarily with the aid of computers. With a small staff of mostly volunteers, the combined organizations have distributed computers, modified devices and customized software to those who need them most. Their newsletter called *Direct Link* is available to individuals or organizations who want to know more about how computers can be used to minimize handicaps.

The Disability News-Letter will also be of interest to handicapped computer users. Editor Gary Warren calls his publication a "sort of mini-newspaper for handicapped computer users like myself." Created entirely on a Commodore 64 using GEOS 2.0, the newsletter concentrates on the interests of the handicapped and includes BBS listings and reviews of related products.

A Happy Ending

For Grady Beard, like so many handicapped individuals, his personal equalizer is a personal computer and modem. Today he manages his own successful business, College Financial Aid Services, from a wheelchair. For a small fee, his company locates private foundations and corporations that offer college scholarships for students in need of financial assistance. Through his connection to a national office in New Jersey, Beard says he can access leads on $4 billion in scholarship money. The transformation from an anguished soldier lying in a Saigon hospital bed to a smiling, independent businessman has been long and painful. But today Beard leads a normal life, complete with four children, and with the satisfaction that he is not only taking care of his own family but is helping others prepare for their future too. Thanks to the personal computer and the help of organizations and individuals who pair them with the handicapped, the label "disabled" is being eradicated.

A Call For Programmers

The most discouraging fact which surfaced while researching this article was that most handicapped computer users are forced to turn to either IBM or Apple for help. And the reason is simple—the specialized software often required for severely handicapped individuals is being developed for those systems, not Commodore's. This is unfortunate since those systems and their software are generally hundreds of dollars more expensive. But that situation could change rapidly if more of the talented programmers in the Commodore community moved into that market.

More than any other tool in existence, the computer has the ability to equalize the differences between users—handicapped and otherwise. The central processing unit of a computer responds the same regardless of whether the user has a limitation.

The Equalizer

The Commodore family of computers can offer all the handicapped community is looking for in assistance. From the bargain-basement-priced 64 to the multitasking power of the Amiga 2500, they are all capable, flexible, powerful and—just as important—affordable. But at this writing much of the specialized software required to fill the special needs of the world's handicapped population is lacking. Hopefully, this absence of software will be corrected in the near future. If you are a programmer looking for a niche in the market to fill, here is your chance. The Commodore world is overflowing with every conceivable type of software from powerful word processors to arcade pleasures, but the void of specialized software to help the impaired is wider than the Grand Canyon.

While encouraging any programmer to consider developing specialty software, I would also warn against rushing into such a project before determining the exact need of your clientele. Like most useful devices, helpful handicapped software is developed to alleviate a particular problem. You can't solve a problem unless you first understand it and know exactly what is required to correct it. In Grady Beard's situation, a system and the knowledge to use it was all that was required. But other handicapped individuals might require a light pen, graphic tablet or a plain old joystick to interact with the computer.

If you know a handicapped person, talk with him or her about the individual situation to find out his or her needs. Or visit a hospital or school which specializes in the care of persons who are handicapped or suffer long-term disabilities. The administrators of these institutions are always delighted with tools, software or otherwise, which help the patients rehabilitate or assist the people in their care. Talented programmers should not only be able to find a profitable outlet for their talents helping the handicapped, but will be rewarded with the knowledge they are helping others.

Computers are not cure-alls for the physically challenged, but when used with imagination they can remove, or at least minimize, the barriers which prevent them from living normal productive lives. If you have written, or are in the process of developing handicapped-related software or hardware let the organizations listed below know about it.

R.E.A.C.H.
Independent Living Center
617 7th Avenue
Forth Worth, TX 76104
(817) 870-9082

C-CAD
2501 Avenue J, Suite 100
Arlington, TX 76006-6191
(817) 640-6613

Closing The Gap
P.O. Box 68 Henderson, MN 56044
(612) 248-3294

Covox Inc.
675-D Conger Street
Eugene, OR 97402
(503) 342-1271

Disability News-Letter
3306-A Moss Court
Midland, TX 79707
(915) 697-0333

The Electronic University Network
505 Beach Street
San Francisco, CA 94133
(415) 928-2800
(800) 225-3276

College Financial Aid Services
Grady Beard (800) 871-1221 ext. 8591

Tips & Tricks/Amiga

```
100 PRINT"[CLEAR,RVS] ENVELOPE
    ADDRESSER - ROBERT E. WILSON
    [SPACE2]"
110 PRINT"THIS PRINTS RETURN ADDRESS
    & ADDRESS"
120 PRINT"ON STANDARD BUSINESS
    ENVELOPES.[DOWN]"
121 P$(1)= "[SPACE10]NAME"
122 P$(2)= "STREET ADDRESS"
123 P$(3)= " APARTMENT NO."
124 P$(4)= "[SPACE10]CITY"
125 P$(5)= "[SPACE9]STATE"
126 P$(6)= "[SPACE6]ZIP CODE"
127 T$=CHR$(16)+"32"
150 PRINT"[L. GREEN,RVS]
    ENTER RETURN ADDRESS:[DOWN]"
160 FOR J=1 TO 6:PRINT P$(J);
    :INPUT RA$(J):NEXT
250 PRINT"[DOWN,YELLOW,RVS]
    ENTER MAILING ADDRESS[DOWN]"
260 FOR J=1 TO 6:PRINT P$(J);
    :INPUT AD$(J):NEXT
330 PRINT"[L. BLUE]":OPEN 1,4
340 PRINT#1," ";RA$(1)
350 PRINT#1," ";RA$(2);"[SPACE4]";
    RA$(3)
360 PRINT#1," ";RA$(4);",";RA$(5);"
    [SPACE2]";RA$(6)
370 FOR J=1 TO 6:PRINT#1:NEXT
390 PRINT#1,T$;AD$(1)
410 PRINT#1,T$;AD$(2);"[SPACE3]";
    AD$(3)
430 PRINT#1,T$;AD$(4);",";AD$(5);"
    [SPACE2]";AD$(6)
440 CLOSE 1
```

Grade Point Average: This program can be used in several ways. Obviously, you can input your past grades to verify your average. You can also project your future GPA by inputting the credits and anticipated grades for your current courses.

The program is designed to accommodate as many grading systems as possible. Valid grades range from A to F, with or without "plusses and minuses." Credits per course can range from 0 to 5.

If you have taken a lot of courses, you might want to automate things by replacing the input statements in lines 130 and 270 with READ statements, and putting your grades and credits into corresponding DATA statements. One way to do it is by using these new lines in place of the old ones:

```
130 READ GD$ : IF GD$="END" THEN 290
270 READ CR
```

Put your grades and credits into DATA statements at the end of the program, like this:

```
1000 REM SPRING '89
1010 DATA B,3 : REM ENGLISH LIT
1020 DATA A,3 : REM COMPUTER SCIENCE
1030 DATA "END"
```

Don't forget to make the last DATA statement "END", because the program will be looking for it.

Henry Huang
Address Unknown

```
100 PRINT"[CLEAR,RVS,SPACE3]
    GRADE POINT AVERAGE - HENRY HUANG
    [SPACE4]"
110 PRINT
120 PRINT"PRESS <RETURN> FOR GRADE TO
    END INPUT."
130 GD$="":INPUT"[DOWN]GRADE ";GD$
    :IF GD$=""THEN GOTO 290
140 IF GD$="A"THEN GD=4:GOTO 270
150 IF GD$="B"THEN GD=3:GOTO 270
160 IF GD$="C"THEN GD=2:GOTO 270
170 IF GD$="D"THEN GD=1:GOTO 270
180 IF GD$="F"THEN GD=0:GOTO 270
190 IF GD$="A-"THEN GD=3.7:GOTO 270
200 IF GD$="B+"THEN GD=3.3:GOTO 270
210 IF GD$="B-"THEN GD=2.7:GOTO 270
220 IF GD$="C+"THEN GD=2.3:GOTO 270
230 IF GD$="C-"THEN GD=1.7:GOTO 270
240 IF GD$="D+"THEN GD=1.3:GOTO 270
250 IF GD$="D-"THEN GD=0.7:GOTO 270
260 PRINT"[DOWN]INVALID GRADE,
     TRY AGAIN.":GOTO 130
270 INPUT"CREDIT";CR:IF CR<0 OR CR>5
    THEN PRINT"[DOWN]INVALID CREDIT,
     TRY AGAIN.[DOWN]":GOTO 270
280 QP=GD*CR:QT=QT+QP:TL=TL+CR
    :GOTO 130
290 IF TL=0 THEN PRINT"[DOWN]
    NO GRADES ENTERED.":END
300 PRINT"[DOWN]YOUR GRADE POINT
    AVERAGE IS"QT/TL
```

Monthly Planner: If you have a Commodore-compatible printer, this will make generic monthly calendar sheets for you. The month and year that you enter will be printed across the top of the sheet. You'll have to add your own dates, since the program isn't smart enough to do it.
Louis K. Avanzi
Las Vegas, NV

```
100 PRINT"[CLEAR,RVS,SPACE5]
    MONTHLY PLANNER - LOUIS AVANZI
    [SPACE5]":POKE 53281,0
110 PRINT"[DOWN2,WHITE] MONTH"
    :PRINT"[DOWN,SPACE2]YEAR [L. BLUE]
    ?[UP2,LEFT]";:INPUT A$
    :PRINT"[DOWN,RIGHT7]";
120 INPUT B$:M$="[SPACE6]"
    :C$=CHR$(14)+M$+M$
130 PRINT"[DOWN3,L. BLUE]
     PRINTING ...":OPEN 4,4
    :PRINT#4,"[SPACE2]";C$;A$;"
    [SPACE2]";B$;CHR$(15)
140 PRINT#4:PRINT#4:PRINT#4
    :E$="[CMDR T9,SHFT P]"
    :F$="[CMDR T]"+E$
150 PRINT#4,CHR$(15);" [SHFT O]";
    E$F$F$F$F$F$F$;CHR$(8)
160 PRINT#4,CHR$(15);" [CMDR G]
     SUNDAY[SPACE2,CMDR M,SPACE2]
    MONDAY[SPACE2,CMDR M,SPACE2]
    TUESDAY [CMDR M] WEDNE";
170 PRINT#4,"SDAY[CMDR M] THURSDAY
    [CMDR M,SPACE2]FRIDAY[SPACE2,
    CMDR M] SATURDAY [CMDR M]";CHR$(8)
180 E$="[CMDR @9,SHFT @]"
    :F$="[CMDR @]"+E$
190 PRINT#4,CHR$(15);" [SHFT L]";
    E$F$F$F$F$F$F$;CHR$(8)
    :G$=M$+"[CMDR G,SPACE2,CMDR M]"
    :H$=" "+G$
200 FOR L=1 TO 6:FOR LL=1 TO 2
    :PRINT#4,CHR$(15);" [CMDR G]
    "G$H$H$H$H$H$H$;CHR$(8)
210 NEXT:I$=M$+"[SHFT L,CMDR @2,
    SHFT @]":J$=" "+I$
220 PRINT#4,CHR$(15)" [CMDR G]";
    I$J$J$J$J$J$J$;CHR$(8)
    :K$=M$+"[SPACE3,CMDR M]":L$=" "+K$
230 FOR LL=1 TO 9:PRINT#4,CHR$(15);"
    [CMDR G]";K$L$L$L$L$L$L$;CHR$(8)
    :NEXT
240 PRINT#4,CHR$(15);" [SHFT L]";
    E$F$F$F$F$F$F$;CHR$(8):NEXT
    :CLOSE 4
282
```

Satellite Finder: If you own a TV satellite dish, here's a program that will help you find any fixed-orbit satellite "visible" from the continental United States. It should also work in other countries, but I'm not able to test it for that.

The program asks your local latitude, longitude, magnetic deviation and whether the deviation is positive or negative. Your local airport can help you with all of these figures. (Magnetic deviation is the difference between magnetic compass north and true north.)

You're then asked to input the longitude of whatever satellite you're looking for.

That longitude is then printed on the screen, along with the azimuth (compass heading) and elevation (angle above the horizon) you should aim at to find your satellite.
Nathan Sims
Lompoc, CA

```
 90 PRINT"[CLEAR,RVS,SPACE5]
    SATELLITE FINDER - NATHAN SIMS
    [SPACE5]"
100 PRINT"[DOWN]ANT LAT":GOSUB 250
    :L=CNV:PRINT"[DOWN]ANT LON"
    :GOSUB 250
110 LL=CNV:PRINT"[DOWN]MAG DEV"
    :GOSUB 250:DEV=CNV
    :IF DEV=0 THEN 65535
120 INPUT"[DOWN,RVS]P[RVOFF]OS/[RVS]N
    [RVOFF]EG";Z$
130 IF Z$="N"THEN DEV=DEV/-1
140 L=L*[PI]/180:LL=LL*[PI]/180
150 R=3950:T=R*COS(L):U=R*SIN(L)
    :C=26250:V=C-T
155 W=ATN(U/V):PK=90-(L+W)*180/[PI]
160 INPUT"[DOWN]SAT LON";N
170 PRINT"[DOWN] LON[SPACE2]";
    " AZIMUTH";"[SPACE3]ELEVATION
    [DOWN]"
```

```
180 Z=N*[PI]/180:R=3950:DL=Z-LL
    :C=26250:X=R*COS(L)
185 Y=R*SIN(L):A=C-X:B=SQR(Y^2+A^2)
190 H=C*COS(DL):D1=H*TAN(DL)
    :E=SQR(A^2+D1^2)
195 F=SQR(Y^2+E^2):DD=COS(L)*COS(DL)
200 DD=ATN(SQR(1-DD^2)/DD)
    :EE=SIN(DL)/SIN(DD)
210 IF(1-EE^2)<>0 THEN 230
220 PRINT"IMPOSSIBLE VALUES":END
230 EE=ATN(EE/(SQR(1-EE^2)))
    :FF=(R*SIN(DD))/F:FF=ATN(FF/(SQR
    (1-FF^2)))
240 AZ=([PI]+EE)*180/[PI]
    :EL=90-(DD+FF)*180/[PI]
    :PRINT N;AZ+DEV;EL:END
250 PRINT"D,M,S[SPACE3]";
    :INPUT"59,59,59[LEFT10]";D,M,S
260 IF D>360 OR M>60 OR S>60 THEN
    PRINT"TOO LARGE":GOTO 250
270 CNV=D+M/60+S/3600:RETURN
```

Combining Commercial Disks: Many commercial programs, anticipating that you own a single-sided 1541 drive, include several disks of files that would easily fit on one double-sided 1571 disk.

You can often use the COPY FILES feature in the 1571 DOS SHELL program to combine these files onto one disk. I used this technique with Baudville's *Awardware* to combine the program files and additional graphics disks.

Glen Young
Renton, WA

Letters

Continued from page 4

even century years would be leap years only if they were evenly divisible by 400! This new calendar (the Gregorian calendar) was gradually adopted by most of the countries of the world since it was much more accurate than the Julian calendar.

The British Empire (including the United States) adopted the new calendar in 1752, but by then an extra day had accumulated in the old calendar so 11 days had to be dropped. The day after September 2, 1752, became September 14. History tells us that many people did not accept this change gracefully. Many towns reported citizens demonstrating in the streets complaining that "11 days had been stolen from their lives." I also understand that this was the origin of the practice of celebrating the "12 days of Christmas", where people started celebrating Christmas on December 25 (Gregorian) and continued until December 25 (Julian).

As stated previously, the Calendar Maker program simply treats every fourth year as a leap year. This was the original problem with the Julian Calendar in the first place!!

And if I really wanted to get picky, I could point out that it also ignores the 11 days missing from 1752!

Respectfully Yours,
William A. Robinson,
Solon Mills, Illinois

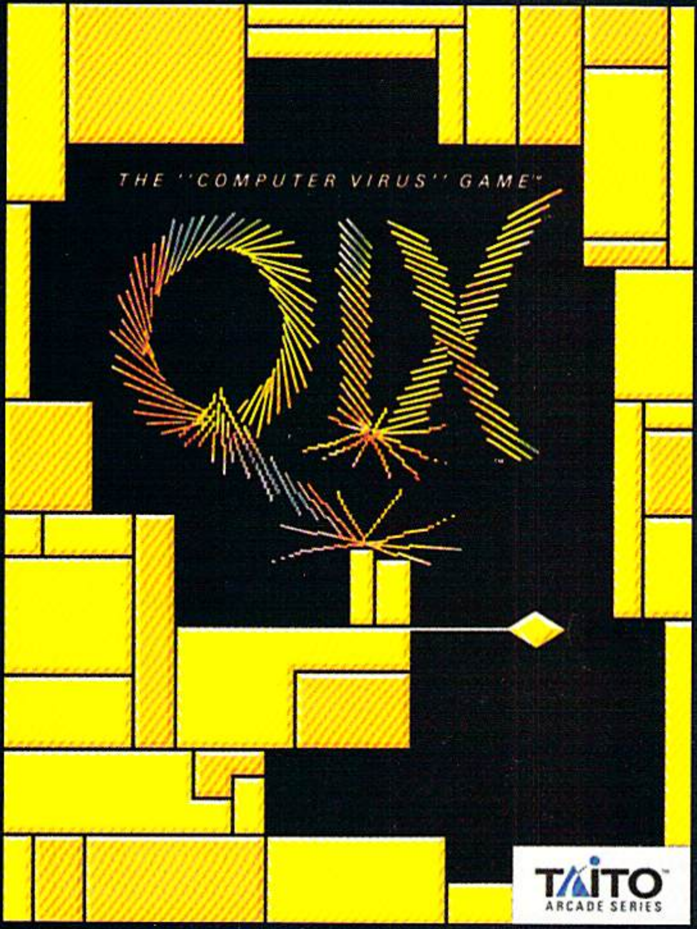
Thanks for the correction.

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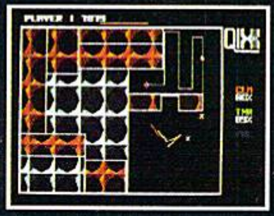
*No Reader Response Number given at Advertiser's Request.

VIRUS!

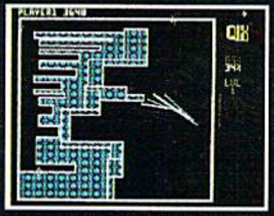
CAN YOU KICK THE QIX® ADDICTION?



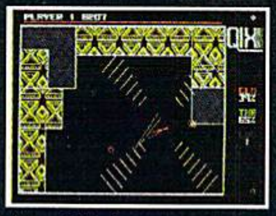
When QIX fever strikes, there is no cure! Like the mind-blowing arcade original, QIX is a computer virus that lives deep inside your computer, attacking without warning. Construct a trap in any one of the billions of configurations possible to immobilize QIX. But watch out for SPARX™ and SPRITZ™ and other deadly energy forms! In this electrical world of high-tech infections, mental dexterity and superior strategy are basic to survival. The practice mode turns beginners into addicts. No one is immune! Get your QIX before QIX gets you!



Actual Atari screen.



Actual C/64 screen.



Actual Amiga screen.

TAITO™

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Nothing like a well-delivered flying kick to stop these bald-headed brutes!



No pain, no dame! Better get a grip on your chako-sticks or you won't get your girl!

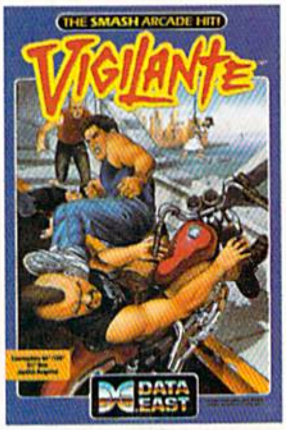
THERE'S MORE THAN ONE WAY TO TRIM A MOHAWK.

Those scuzzy guttersnipes have resurfaced. This time they're wreaking havoc on your home turf and they've kidnapped your woman. There's no telling *what* they might do! Even the cops have copped out. It will be up to you to save her!

As Vigilante, you must take the power into your own hands—and stop these maniacal mohawks—before it's too late.

Only you can defeat the skinheads, deliver justice, and rescue your babe. Use your fists, your feet, or nail 'em with your numchucks, because these punks only fight one way—dirty!

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